TECHNICAL MEMORANDUM

September 2019 Quarterly Performance Monitoring OMC Plant 2 Site (OU4), Waukegan, Illinois WA No. 237-RARA-0528/Contract No. EP-S5-06-01

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DATE:	February 3, 2020
PROJECT NUMBER:	696001.CV.01
REVISION NO.:	0

Introduction

This memorandum documents the field activities and results associated with the baseline performance groundwater sampling conducted in September 2019 at the Outboard Marine Corporation (OMC) Plant 2 Site (Operable Unit [OU] 4) in Waukegan, Illinois. The injections were conducted in April and May 2018 and included the two trichloroethene (TCE) hotspot and three lower-concentration source areas shown in Figure 1. The work is pursuant to Technical Direction Memorandum No. 1 received from EPA (dated July 17, 2017) authorizing a second injection event and pre- and post-injection monitoring to evaluate the performance of the treatment. As specified in EPA's Record of Decision (EPA 2009), the overall remedial action objective for the groundwater remedy is to reduce the concentrations of the chemicals of concern (TCE, cis-1,2-dichloroethene [cis-1,2-DCE], and vinyl chloride) to levels that would allow the groundwater to be used for residential purposes without restrictions.

The monitoring wells in the performance and sitewide well networks and analysis to be performed as part of the monitoring program were documented in the *Quality Assurance Project Plan Addendum III Letter* approved by EPA on April 5, 2019 (CH2M 2019).

Field Activities

The baseline performance groundwater sampling event was conducted from September 16 to 18, 2019, and included the following:

- Collected depth to water from sitewide and performance monitoring wells (63 locations) and water quality measurements and groundwater samples from 34 performance monitoring wells. Table 1 and Figure 1 show the perfomance monitoring well locations.
- Managed groundwater purge water in 5-gallon buckets, and temporarily stored water in tanks and then treated it by the onsite water treatment system.
- Performance monitoring well locations (34 locations) were sampled for analysis of chlorinated volatile organic compounds (VOCs), total organic carbon (TOC), and chloride (Figures 2a and 2b).

Groundwater Sampling

Groundwater samples were collected using low-flow methods as described in the quality assurance project plan (CH2M 2013). The monitoring wells were purged until the field parameters (temperature, specific conductance, dissolved oxygen, pH, oxidation reduction potential, and turbidity) were stable based on readings from a YSI multi-parameter flow-through cell. The low-flow parameters were

recorded for each well (Attachment 1). Figures 3a and 3b show the water level elevations for the shallow and deep portions of the aquifer.

Samples requiring VOC analysis were submitted to a laboratory within EPA's Analytical Services Branch, while TOC and chloride samples were sent to Katahdin Analytical Services of Scarborough, Maine.

Waste Management

Purge water from the sampling was containerized and treated by the water treatment system related to the onsite consolidation facility.

Personal protective equipment was doubled-bagged and placed with the general waste from the site for disposal.

Data Management and Evaluation

The field sample data were entered into EPA's Scribe software. The data were used to create chain-of-custody forms and for tracking purposes.

Following sample analysis, the Contract Laboratory Program laboratory transmitted the analytical data and supporting documentation to EPA for validation, after which, an electronic analytical report and electronic and hard copy validation reports were sent to CH2M. Following EPA's data validation, the CH2M project chemist reviewed the validation summaries and entered the qualifiers into the project database. Attachment 2 contains the data usability evaluation technical memorandum.

Analytical Results

Table 2 shows stabilized field parameter results for samples collected in September 2019. Table 3 contains analytical laboratory results for VOC, TOC, and chloride parameters.

Figures 2a and 2b show the contaminant distribution based upon the total detected concentrations of TCE, cis-1,2-DCE, and vinyl chloride in the shallow and deep portions of the aquifer.

Conclusions and Recommendations

The analytical results for TCE, cis-1,2-DCE, and vinyl chloride are relatively similar to the previously collected data from March and May 2019. The groundwater quality and analytical results from the previous monitoring (April 2014 through December 2016), March 2018 pre-injection, August 2018 post-injection sampling event can be compared to evaluate the effectiveness of the supplemental treatment. CH2M recommends continuing quarterly groundwater performance monitoring with the purpose of evaluating the overall performance of the enhanced in situ biodegradation and in situ chemical reduction treatment in reducing chlorinated VOC concentrations in the groundwater.

References

CH2M HILL, Inc. (CH2M). 2013. *Quality Assurance Project Plan, Revision 2, OMC Plant 2 Site, Waukegan, Illinois*. *WA No. 105-RARA-0528, Contract No. EP-S5-06-01.* March.

CH2M HILL, Inc. (CH2M). 2019. *Quality Assurance Project Plan Addendum III Letter, OMC Plant 2 Site, Waukegan, Illinois. WA No. 237-RARA-0528, Contract No. EP-S5-06-01*. April.

U.S. Environmental Protection Agency (EPA). 2009. *Record of Decision, Outboard Marine Corporation Superfund Site, Waukegan. Lake County, Illinois*. February.

Tables

Table 1. Summary of Well IDs and Analytes for Quarterly Groundwater Sampling

September 2019 Quarterly Performance Monitoring

OMC Plant 2 Site (OU4) - Waukegan, IL

Well Number	FD	MS/MSD	VOCs	TOC	Chloride	Date Collected
MW-600D			X	X	X	9/18/2019
MW-600S			X	X	X	9/18/2019
MW-601D			X	X	X	9/16/2019
MW-601S			X	X	X	9/16/2019
MW-602D	X		X	X	X	9/16/2019
MW-602S			X	X	X	9/16/2019
MW-603D			X	X	X	9/17/2019
MW-603S		X	X	X	X	9/17/2019
MW-604D			X	X	X	9/17/2019
MW-604S			X	X	X	9/17/2019
MW-605D	X		X	X	X	9/17/2019
MW-605S		X	X	X	X	9/17/2019
MW-606D			X	X	X	9/17/2019
MW-606S			X	X	X	9/17/2019
MW-607D			X	X	X	9/17/2019
MW-607S			X	X	X	9/17/2019
MW-612D			X	X	X	9/18/2019
MW-612S	X		X	X	X	9/18/2019
MW-613D			X	X	X	9/18/2019
MW-613S			X	X	X	9/18/2019
MW-614D			X	X	X	9/17/2019
MW-614S			X	X	X	9/17/2019
MW-615D			X	X	X	9/17/2019
MW-615S			X	X	X	9/17/2019
MW-619D			X	X	X	9/17/2019
MW-619S			X	X	X	9/17/2019
MW-620D			X	X	X	9/16/2019
MW-620S			X	X	X	9/16/2019
MW-621D			X	X	X	9/18/2019
MW-621S	X		X	X	X	9/18/2019
MW-625D			X	X	X	9/18/2019
MW-625S			X	X	X	9/18/2019
MW-626D			X	X	X	9/16/2019
MW-626S			X	X	X	9/16/2019

Notes:

Field duplicates collected for every 10 samples and MS/MSD for every 20 samples.

One field blank and one equipment blank collected.

FD = field duplicate, ID = identification, MS/MSD = matrix spike/matrix spike duplicate,
TOC = total organic carbon, VOC = volatile organic compounds

Table 2. Field Parameters

September 2019 Quarterly Performance Monitoring

OMC Plant 2 Site (OU4) - Waukegan, IL

		MW-600S 09/18/2019	MW-600D 09/18/2019	MW-601S 09/16/2019	MW-601D 09/16/2019	MW-602S 09/16/2019	MW-602D 09/16/2019	MW-603S 09/17/2019	MW-603D 09/17/2019	MW-604S 09/17/2019	MW-604D 09/17/2019	MW-605S 09/17/2019	MW-605D 09/17/2019	MW-606S 09/17/2019	MW-606D 09/17/2019	MW-607S 09/17/2019	MW-607D 09/17/2019	MW-612S 09/18/2019	MW-612D 09/18/2019
Depth to Water	ft btoc	3.11	3.22	2.93	2.85	2.45	2.65	2.77	2.38	2.26	2.48	4.06	4.45	3.72	5.01	3.22	2.89	3.28	2.97
Dissolved Oxygen	mg/L	0.08	0.22	0.3	0.13	0.16	0.21	0.31	0.17	0.15	0.13	0.2	0.17	0.19	0.14	0.22	0.2	0.19	1.51
Electrical Conductivity	mS/cm	0.873	3.202	0.923	5.252	1.418	3.234	1	6.845	2.547	8.136	1.47	7.39	1.594	9.255	1.374	5.418	2.531	4.5
Flow Rate	mL/min	250	300	300	340	340	300	300	320	340	300	350	220	275	240	320	200	340	275
Oxidation Reduction Potential	mV	-110.5	-168.7	-118.1	-24.8	-85.3	-203.9	-111.5	10	-102.2	-176	-121	-91.8	-97.8	-99.6	-158.5	-142.4	-94.9	-26
pH	pH units	6.86	6.91	6.9	6.25	7.16	7.39	6.8	5.96	6.91	6.23	6.9	6.06	7.83	6.32	7.31	7.54	6.93	5.88
Temperature	°C	19.31	15.88	19.4	15.41	19.13	15.49	18.95	14.94	18.89	17.05	20.58	16.53	19.55	17.12	20.52	15.28	19.77	17.79
Turbidity	NTU	1.95	0	0	7.6	1.8	0	0	0	6.7	6.9	0	0	0	11.5	0	0	0	4.92

Notes:

°C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

mL/min = millimeters per minute

mS/cm = milliSiemens per centimeter

mV = millivolts

NTU = nephelometric turbidity units

Table 2. Field Parameters

September 2019 Quarterly Performance Monitorin

OMC Plant 2 Site (OU4) - Waukegan, IL

		MW-613S 09/18/2019	MW-613D 09/18/2019	MW-614S 09/17/2019	MW-614D 09/17/2019	MW-615S 09/17/2019	MW-615D 09/17/2019	MW-619S 09/17/2019	MW-619D 09/17/2019	MW-620S 09/16/2019	MW-620D 09/16/2019	MW-621S 09/18/2019	MW-621D 09/18/2019	MW-625S 09/18/2019	MW-625D 09/18/2019	MW-626S 09/16/2019	MW-626D 09/16/2019
Depth to Water	ft btoc	3.88	4.05	2.88	2.83	4.35	3.9	3.78	4.23	4.16	5.2	4.4	4.5	2.62	3.18	5.25	5.37
Dissolved Oxygen	mg/L	0.02	0.14	0.11	0.11	0.12	0.1	0.21	0.13	0.15	0.13	0.18	0.2	0.13	0.13	0.18	0.2
Electrical Conductivity	mS/cm	2.139	4.08	0.996	11.91	0.655	8.229	1.446	5.016	2.309	5.931	2.034	5.537	0.587	5.317	2.367	4.688
Flow Rate	mL/min	225	260	250	200	340	340	250	240	150	240	250	240	250	300	200	210
Oxidation Reduction Potential	mV	-112.9	-305.6	65.8	-174.2	-39.8	-464.5	-86.1	-223.8	-230	-363.3	-120.5	-74.8	101.1	-179.5	-115.2	-132.2
pH	pH units	7.46	7.14	6.83	7.9	7.06	9.81	7.56	8.22	6.94	7.41	7.13	6.46	7.05	8.74	7.2	7.39
Temperature	°C	7.46	14.32	19.46	16.61	20.24	16.62	19.25	14.98	21.14	17.31	19.04	16.13	18.88	15.98	17.39	14.84
Turbidity	NTU	1.03	0	1.9	5.5	1.4	0	0	0	0	8	3.96	5.7	0.5	0	0	0.1

Notes:

°C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

mL/min = millimeters per minute

mS/cm = milliSiemens per centimeter

mV = millivolts

NTU = nephelometric turbidity units

Table 3. Analytical Results

September 2019 Quarterly Performance Monitoring

OMC Plant 2 Site (OU4) - Waukegan, IL

Parameter	MCL[a]	Unit	MW-600S 09/18/2019	MW-600D 09/18/2019	MW-601S 09/16/2019	MW-601D 09/16/2019	MW-602S 09/16/2019	MW-602D 09/16/2019	MW-603S 09/17/2019	MW-603D 09/17/2019	MW-604S 09/17/2019	MW-604D 09/17/2019	MW-605S 09/17/2019	MW-605D 09/17/2019	MW-606S 09/17/2019	MW-606D 09/17/2019	MW-607S 09/17/2019	MW-607D 09/17/2019	MW-612S 09/18/2019	MW-612D 09/18/2019	MW-613S 09/18/2019	MW-613D 09/18/2019	MW-614S 09/17/2019	MW-614D 09/17/2019	MW-615S 09/17/2019
Volatile Organic Compounds																									
1,1,1-Trichloroethane	200	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,1-Dichloroethane	-	µg/L	5 U	5 U	0.27 J	0.75 J	0.78 J	130 U	0.48 J	25 U	0.72 J	130 U	0.99 J	130 U	0.6 J	0.43 J	5 U	1000 U	0.36 J	5 U	5 U	500 U	5 U	5 U	0.26 J
1,1-Dichloroethene	7	µg/L	5 U	5 U	5 U	5 U	5 U	33 J	5 U	11 J	5 U	30 J	2.8 J	130 U	5 U	5 U	5 U	570 J	5 U	0.92 J	5 U	500 U	5 U	5.1	5 U
1,2,3-Trichlorobenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	70	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,2-Dibromo-3-chloropropane	0.2	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,2-Dibromoethane	0.05	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,2-Dichlorobenzene	600	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,2-Dichloroethane	5	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	0.92 J	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,2-Dichloropropane	5	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,3-Dichlorobenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
1,4-Dichlorobenzene	75	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
2-Butanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	250 U	10 U	50 U	10 U	250 U	10 U	250 U	10 U	190	10 U	2000 U	10 U	62	10 U	1000 U	10 U	10 U	10 U
2-Hexanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	250 U	10 U	50 U	10 U	250 U	10 U	250 U	10 U	3.5 J	10 U	2000 U	10 U	10 U	10 U	1000 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	250 U	10 U	50 U	10 U	250 U	10 U	250 U	10 U	4 J	10 U	2000 U	10 U	1.6 J	10 U	1000 U	10 U	10 U	10 U
Acetone	-	µg/L	10 U	10 U	10 U	10 U	10 U	250 U	10 U	50 U	10 U	250 U	10 U	250 U	10 U	81	10 U	2000 U	10 U	74	10 U	1000 U	10 U	10 U	10 U
Benzene	5	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Bromochloromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Bromodichloromethane[b]	80	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Bromoform[b]	80	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Bromomethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Carbon Disulfide	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	0.3 J	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Carbon tetrachloride	5	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Chlorobenzene	100	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	0.19 J	5 U	5 U	500 U	5 U	5 U	5 U
Chlorodibromomethane[b]	80	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Chloroethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	0.2 J	25 U	0.31 J	130 U	4.1 J	130 U	0.98 J	0.34 J	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Chloroform[b]	80	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Chloromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	70	µg/L	0.28 J	0.57 J	1.2 J	0.67 J	1.5 J	12000	0.9 J	3900	100	11000	260	14000	68	19	0.23 J	140000	0.35 J	62	0.6 J	20000	5 U	380	3.1 J
cis-1,3-Dichloropropene	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Cyclohexane	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Dichlorodifluoromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Ethylbenzene	700	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Freon 113	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Isopropylbenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Methyl Acetate	-	µg/L	5 U	3.4 J	5 U	3.2 J	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	1.9 J	5 U	1000 U	5 U	7.5	5 U	500 U	5 U	5 U	5 U
Methyl tert-butyl ether (MTBE)	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Methylcyclohexane	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Methylene Chloride	5	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	0.51 J	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Styrene	100	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Tetrachloroethene	5	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Toluene	1,000	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	100	µg/L	5 U	5 U	5 U	5 U	5 U	53 J	5 U	3.9 J	0.21 J	9.4 J	1.4 J	15 J	1.1 J	2.9 J	5 U	540 J	5 U	1.6 J	5 U	27 J	5 U	2.5 J	0.27 J
trans-1,3-Dichloropropene	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Trichloroethylene	5	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	22	130 U	5 U	5 U	5 U	36000	5 U	0.43 J	0.43 J	30000	5 U	8.7	0.54 J
Trichlorofluoromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Vinyl Chloride	2	µg/L	0.89 J	6.6	1.2 J	2 J	0.71 J	4300	2 J	4700	150	17000	120	6600	77	47	5 U	8700	5 U	84	5 U	5400	0.24 J	680	1.1 J
Xylene, o[c]	10,000	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Xylenes, m & p[c]	10,000	µg/L	5 U	5 U	5 U	5 U	5 U	130 U	5 U	25 U	5 U	130 U	5 U	130 U	5 U	5 U	5 U	1000 U	5 U	5 U	5 U	500 U	5 U	5 U	5 U
Wet Chemistry																									
Chloride (Cl)	-	mg/L	13	280 J-	2.1	260	15	310	3.1	300	78	180	24 J-	330	40	190	13	300	99	780	13	290 J	19	280	5.2
Total Organic Carbon	-	mg/L	3.6	240	4.1	650	5.5	71	4.7	630	6.8	660	6	400	2.9	1100	2.3	30	6.2	1100	9.6	160	6.3	130	4.1

Notes:

[a] Maximum Contaminant Level (MCL), EPA National Primary Drinking Water Regulations, EPA 816-F-09-004, May 2009

[b] MCL is for Total Trihalomethanes, includes the individual trihalomethanes (bromodichloromethane, chlorodibromomethane, chloroform, tribromomethane).

[c] MCL is for Total Xylenes, includes m,p-Xylene and o-Xylene; the MCL for total Xylenes was considered an evaluation surrogate.

Shaded cells indicate detection over the MCL

- = no criteria

µg/L = micrograms per liter

J indicates the result is an estimated quantity.

U indicates he analytes was not detected above the reported quantitation limit (QL).

UJ indicates the analyte was not detected above the QL and the QL is approximate

Table 3. Analytical Results

September 2019 Quarterly Performance Monitoring

OMC Plant 2 Site (OU4) - Waukegan, IL

Parameter	MCL[a]	Unit	MW-615D 09/17/2019	MW-619S 09/17/2019	MW-619D 09/17/2019	MW-620S 09/16/2019	MW-620D 09/16/2019	MW-621S 09/18/2019	MW-621D 09/18/2019	MW-625S 09/18/2019	MW-625D 09/18/2019	MW-626S 09/16/2019	MW-626D 09/16/2019
Volatile Organic Compounds													
1,1,1-Trichloroethane	200	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1,2,2-Tetrachloroethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1,2-Trichloroethane	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1-Dichloroethane	-	µg/L	5 U	5 U	5 U	0.17 J	5 U	5 U	0.39 J	0.2 J	10 U	0.19 J	5 U
1,1-Dichloroethene	7	µg/L	2.6 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	7.1	5 U
1,2,3-Trichlorobenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2,4-Trichlorobenzene	70	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dibromo-3-chloropropane	0.2	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dibromoethane	0.05	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dichlorobenzene	600	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dichloroethane	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dichloropropane	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,3-Dichlorobenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,4-Dichlorobenzene	75	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
2-Butanone	-	µg/L	27 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U	10 U	10 U
2-Hexanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U	10 U	10 U
4-Methyl-2-Pentanone	-	µg/L	3.4 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U	10 U	10 U
Acetone	-	µg/L	47	10 U	10 U	10 U	17 U	10 U	10 U	10 U	20 U	10 U	10 U
Benzene	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromochloromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromodichloromethane[b]	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromoform[b]	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromomethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Carbon Disulfide	-	µg/L	0.38 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Carbon tetrachloride	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Chlorobenzene	100	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Chlorodibromomethane[b]	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Chloroethane	-	µg/L	0.33 J	5 U	0.57 J	1.3 J	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Chloroform[b]	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Chloromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
cis-1,2-Dichloroethene	70	µg/L	150	0.69 J	2.5 J	14	0.93 J	0.29 J	5.9	2 J	0.53 J	590	0.66 J
cis-1,3-Dichloropropene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Cyclohexane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Dichlorodifluoromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Ethylbenzene	700	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Freon 113	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Isopropylbenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Methyl Acetate	-	µg/L	13	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Methyl tert-butyl ether (MTBE)	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Methylcyclohexane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Methylene Chloride	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Styrene	100	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Tetrachloroethene	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Toluene	1,000	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
trans-1,2-Dichloroethene	100	µg/L	14	5 U	5 U	0.15 J	0.25 J	5 U	0.56 J	5 U	10 U	3.3 J	5 U
trans-1,3-Dichloropropene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Trichloroethylene	5	µg/L	17	0.25 J	5 U	1.9 J	5 U	0.45 J	0.15 J	0.29 J	10 U	220	5 U
Trichlorofluoromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Vinyl Chloride	2	µg/L	170	5 U	18	19	3.7 J	5 U	27	10	1200	180	4.1 J
Xylene, o[c]	10,000	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Xylenes, m & p[c]	10,000	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Wet Chemistry													
Chloride (Cl)	-	mg/L	340	29	180	20	96	170	480	24	180	13	130
Total Organic Carbon	-	mg/L	320	1.8	47	16	460	5.1	440	1.9	69	5.6	18

Notes:

[a] Maximum Contaminant Level (MCL), EPA National Primary Drinking Water Regulations, EPA 816-F-09-004, May 2009

[b] MCL is for Total Trihalomethanes, includes the individual trihalomethanes (bromodichloromethane, chlorodibromomethane, chloroform, tribromomethane).

[c] MCL is for Total Xylenes, includes m,p-Xylene and o-Xylene; the MCL for total Xylenes was considered an evaluation surrogate.

Shaded cells indicate detection over the MCL

- = no criteria

µg/L = micrograms per liter

J indicates the result is an estimated quantity.

U indicates he analytes was not detected above the reported quantitation limit (QL).

UJ indicates the analyte was not detected above the QL and the QL is approximate

Figures

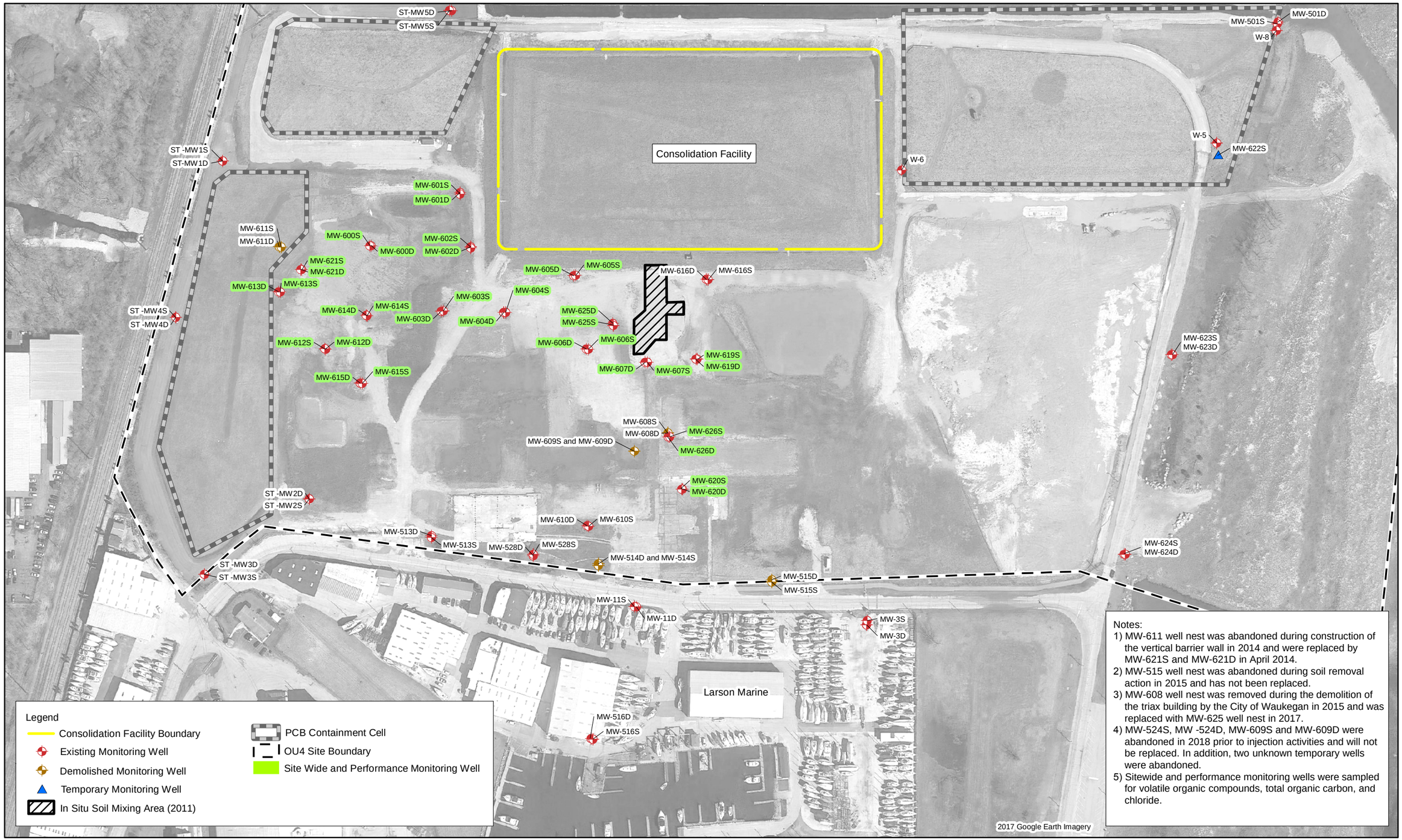
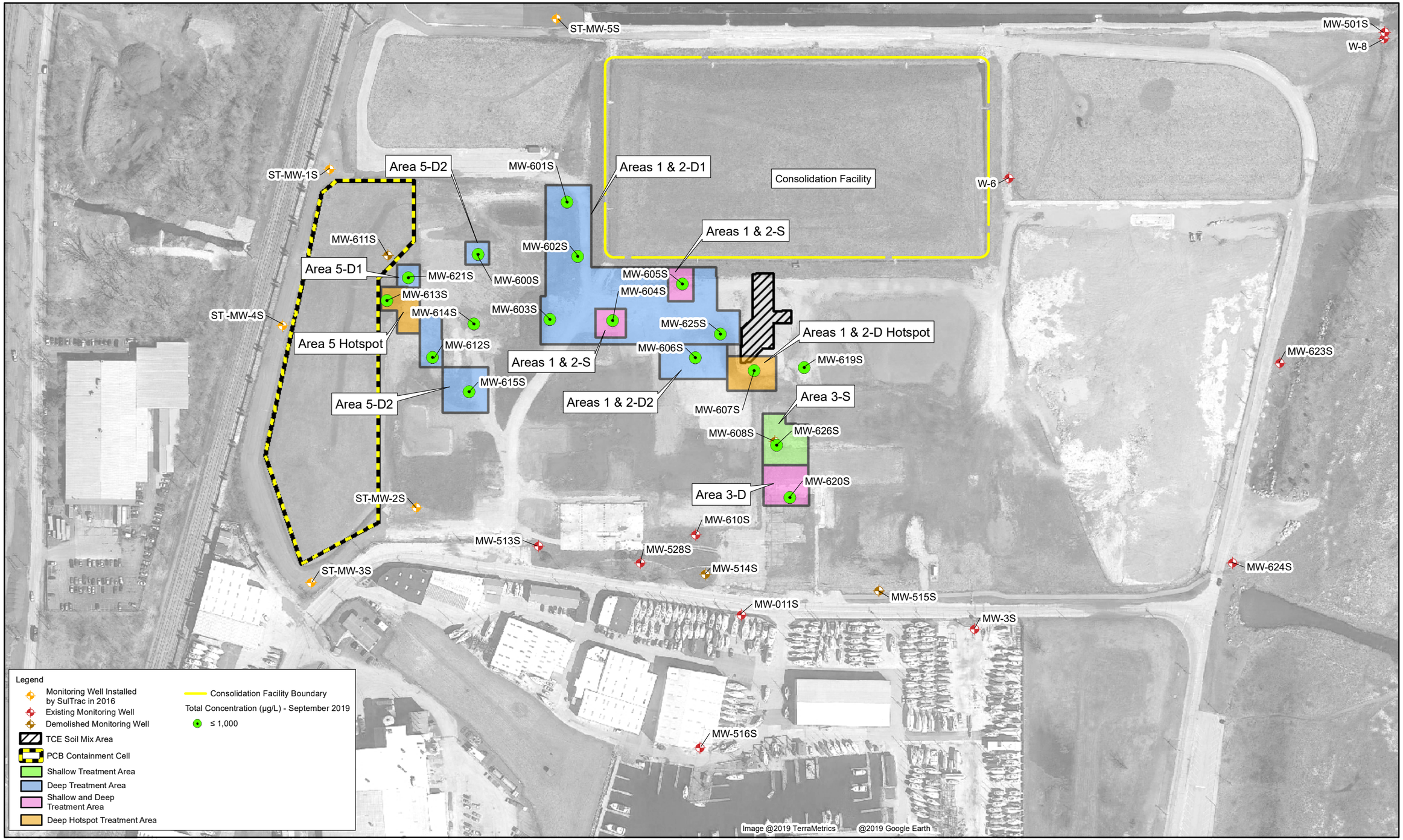


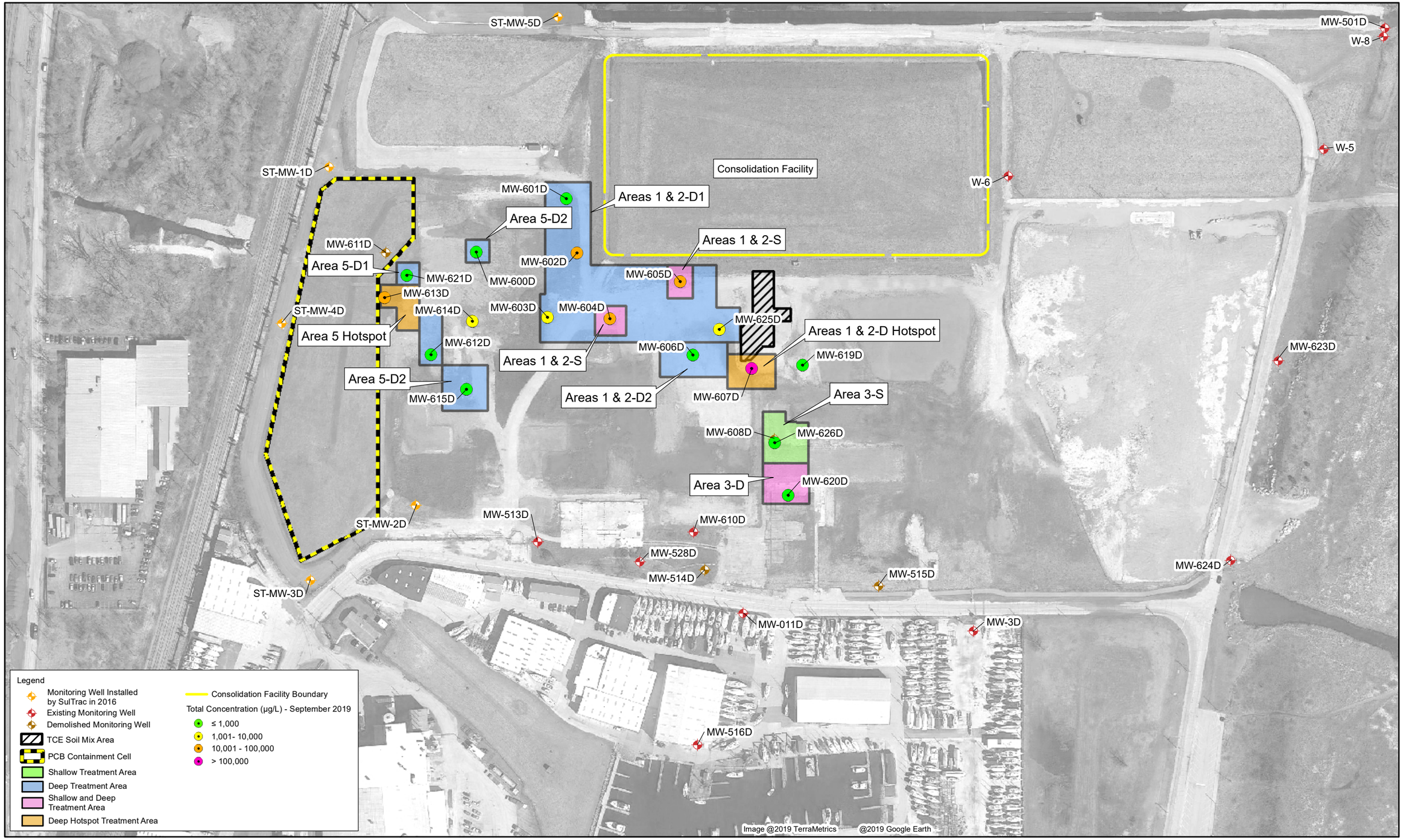
Figure 1
Monitoring Well and Groundwater Sampling Locations
OMC Plant 2
Waukegan, IL

\\LAKEFRONT\PROJ\EPA\186305-OMC\GIS_DATA\MXDS\2019\MISC\FIGURE 1 - MW AND GW SAMPLING LOCATIONS.MXD JHANSEN1 5/16/2019 12:21:53 PM



Notes:
1. MW-611S and MW-611D were abandoned during the construction of the vertical barrier wall and replaced by MW-621S and MW-621D.
2. MW-608S was destroyed during the demolition of the triax building in 2015.
3. Total concentration is the sum of the detected concentrations for trichloroethene, cis-1,2-dichloroethene, and vinyl chloride.

Figure 2A
September 2019 Sampling Results - Shallow Wells
OMC Plant 2
Waukegan, IL



Notes:
1. MW-611S and MW-611D were abandoned during the construction of the vertical barrier wall and replaced by MW-621S and MW-621D.
2. MW-608S and MW-608D were destroyed during the demolition of the triax building in 2015.
3. Total concentration is the sum of the detected concentrations for trichloroethene, cis-1,2-dichloroethene, and vinyl chloride.

Figure 2B
September 2019 Sampling Results - Deep Wells
OMC Plant 2
Waukegan, IL

\\LAKEFRONT\PROJ\EPA\186305-OMC\GIS_DATA\MXDS\2019\GW_SAMPLE_EVENT2019\FIGURE 2B - SEPTEMBER 2019 SAMPING RESULTS - DEEP WELLS.MXD JHANSEN1 1/29/2020 2:31:27 PM

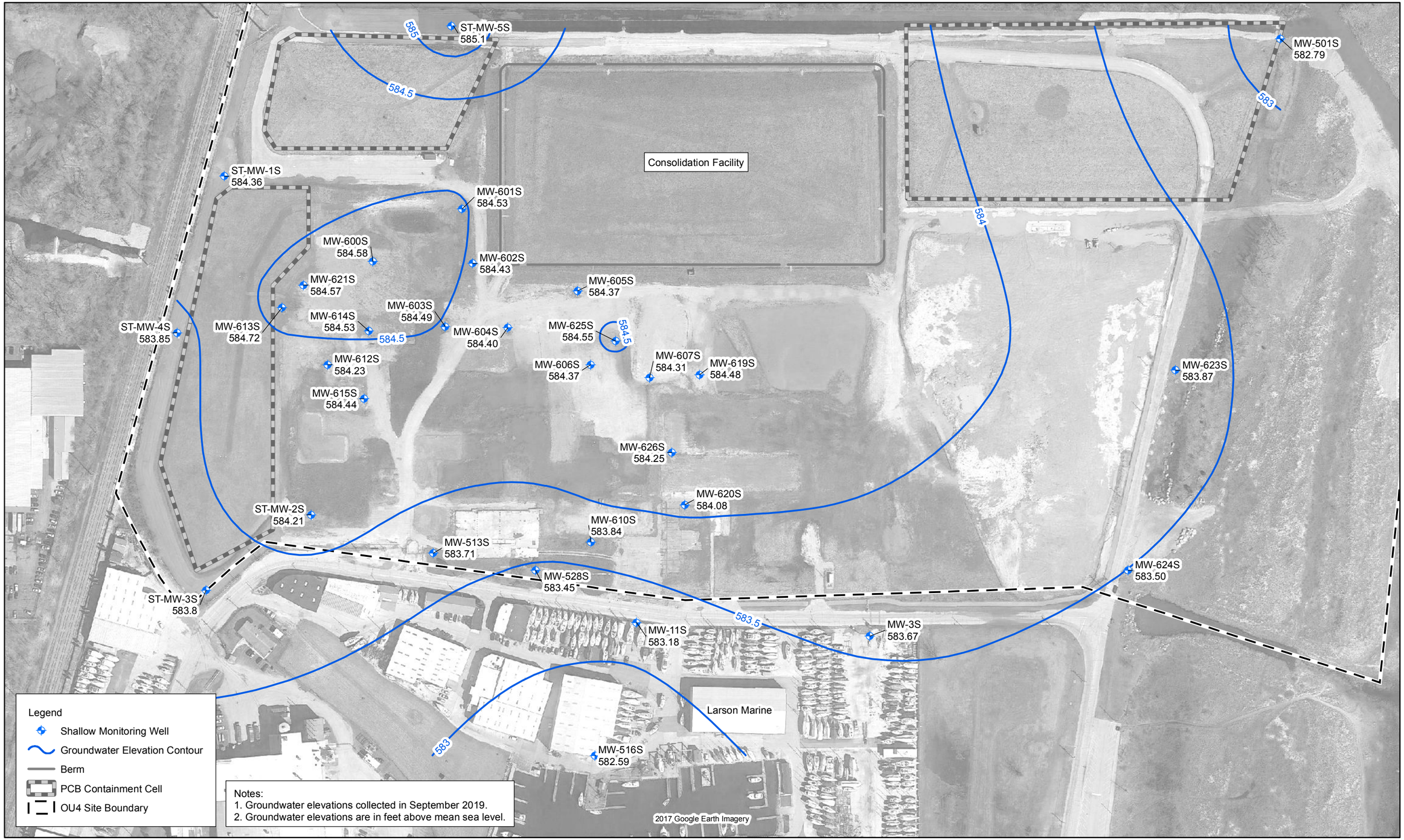


Figure 3A
September 2019 Shallow Potentiometric Surface Map
OMC Plant 2
Waukegan, IL

\\LAKEFRONT\PROJ\EPA\186305-OMC\GIS_DATA\MXDS\2019\GW_SAMPLE_EVENT2019\FIGURE 3A - SHALLOW POTENTIOMETRIC SURFACE - SEPT 2019.MXD AESPEJO 11/8/2019 1:39:25 PM

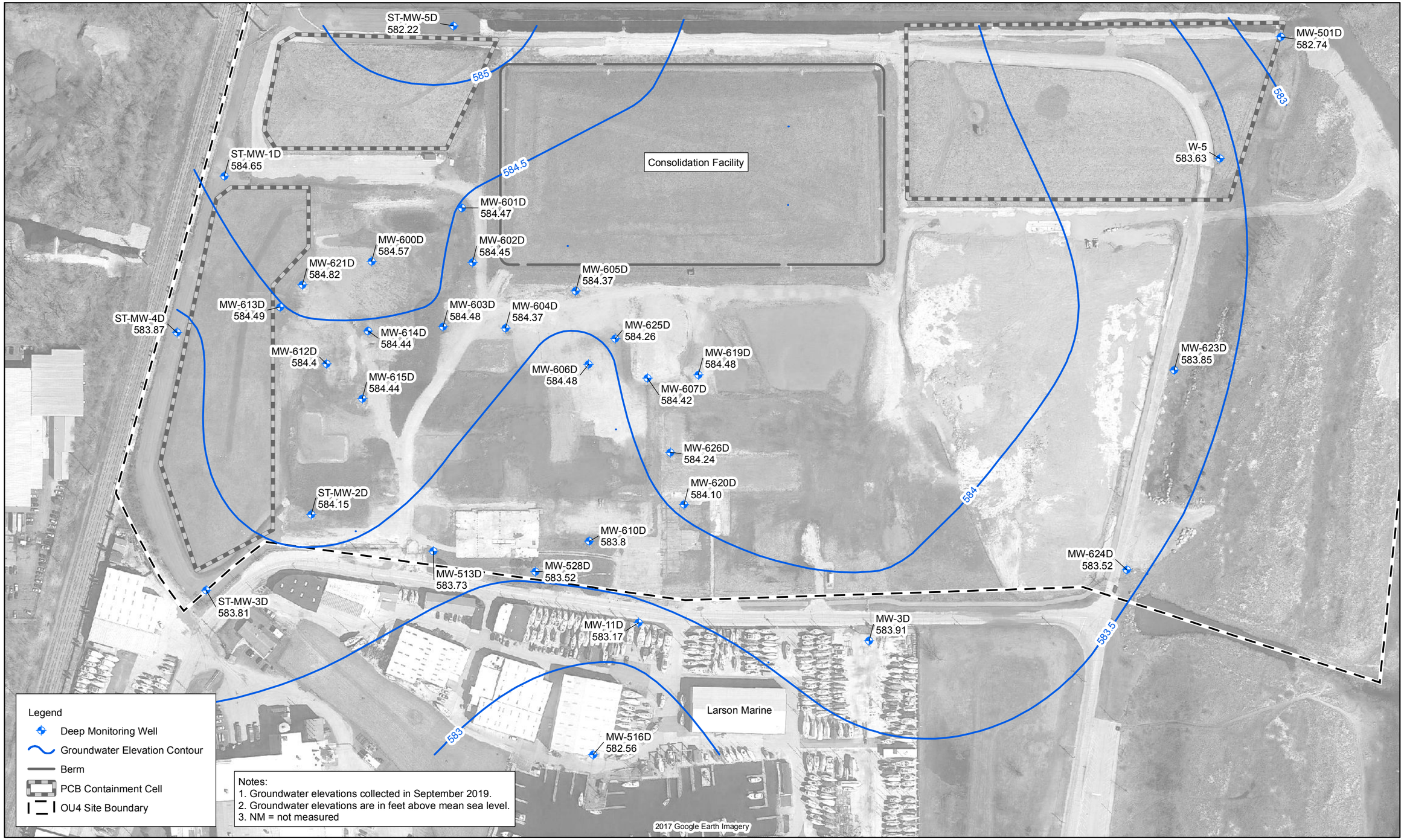


Figure 3B
September 2019 Deep Potentiometric Surface Map
OMC Plant 2
Waukegan, IL

ch2m

\\LAKEFRONT\PROJ\EPA\186305-OMC\GIS_DATA\MXDS\2019\GW_SAMPLE_EVENT2019\FIGURE 3B - DEEP POTENTIOMETRIC SURFACE - SEPT 2019.MXD AESPEJO 11/11/2019 4:12:21 PM

Attachment 1
Groundwater Sampling Forms

Monitoring Well

600D (KM) — Field Data Sheet - OMC Groundwater Site

Well Number: ~~600D~~ — Field Crew: MG/JG — Purpose of Sampling: OMC Quarterly Sampling

Site: OMC — Field Conditions: Sunny, 78°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: Not existent
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: Not existent
Well Label (outside)	Acceptable	(Not Acceptable)	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 091819 — Time: 0944 — Method: Low flow

Total Well Depth (ft) = 25.15

Depth to Water (ft): = 3.22

Water Column (ft): = 21.93

1 volume

Comments:

OBSERVATIONS

Odor: None , (Low) High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0947	0.00	300	7.75	1.24	-135.6	3.161	16.50	1.8	3.62
0952	0.5	300	7.09	0.30	-152.8	3.223	15.76	0.00	3.53
0957	1.0	300	6.97	0.23	-156.1	3.203	15.76	0.00	3.54
1002	1.4	300	6.93	0.22	-160.1	3.198	15.84	0.00	3.54
1007	2.1	300	6.91	0.22	-168.7	3.202	15.88	0.00	3.55

SAMPLING

Date: 091819 (KM) — Time: 1010

Sample ID: OMC-MW-600D 600D — Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate — Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y — Well locked? Y

SIGNED/SAMPLER: Matt Gallo

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-GOOS | Field Crew: JG, MG | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: 70°F Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 9/19/19 Time: 0940 Method: Low flow

Total Well Depth (ft) = 10.56

Depth to Water (ft): = 3.11

Water Column (ft): = 7.45

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0945	START PURGE								
0950	0.3	250	6.94	0.34	-92.9	0.890	19.55	160	3.13
0955	0.6	250	6.88	0.10	-101.8	0.878	19.10	20.6	3.13
1000	1.0	250	6.83	0.08	-89.5	0.869	19.27	8.37	3.13
1005	1.3	250	6.85	0.08	-101.7	0.875	19.20	3.35	3.12
1010	1.6	250	6.87	0.08	-111.1	0.874	19.47	1.77	3.12
1015	2.0	250	6.86	0.08	-110.5	0.870	19.31	1.95	3.12
1020	SAMPLE								

SAMPLING

Date: 9/18/19 Time: 1020

Sample ID: VOCs, TOG, Cl⁻ Method of Sample Collection: Grab

Analytical Parameters: OMC-MW-GOOS

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: 601D Field Crew: R-K/K-M Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: N/A No well pad
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 09/16/18 Time: 1440 Method: Low flow

Total Well Depth (ft) = 24.96

Depth to Water (ft): = 2.85

Water Column (ft): = 29.11

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1345		340	6.25	1.28	130.8	5.124	16.08	6.0	3.02
1350		340	6.21	0.44	68.3	4.984	16.00	8.3	2.98
1355		340	6.20	0.28	48.0	5.590	15.89	10.8	3.01
1400		340	6.18	0.20	31.2	5.382	15.72	15.0	3.01
1405		340	6.22	0.17	7.5	5.262	15.71	12.0	3.01
1410		340	6.23	0.17	-3.7	5.289	15.48	5.2	3.01
1415		340	6.23	0.16	-9.5	5.295	15.61	6.0	3.01
1420		340	6.24	0.14	-17.8	5.285	15.49	6.8	3.01
1425		340	6.24	0.14	-20.9	5.218	15.52	8.9	3.01
1430	~4	340	6.25	0.13	-24.8	5.252	15.41	7.6	3.01
			Sampled @ 1435						

SAMPLING

Date: 9/16/19 Time: 1435

Sample ID: OMC-MW601D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Cl

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-601S Field Crew: K.Mg Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 75°F Cloudy

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/16/19 Time: 1330 Method: peristaltic low flow

Total Well Depth (ft) = 10.62

Depth to Water (ft): = 2.93

Water Column (ft): = 7.69

1 volume

Comments:

OBSERVATIONS

Odor: (None) Low , High , H_2S , Fuel Like , Other:

Comments:

YSI # 10J101779

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1340		300	6.76	2.75	-26.2	0.900	21.43	4.6	3.01
1345		300	6.72	2.59	-67.2	0.963	21.09	1.6	3.01
1350		300	6.72	0.76	-107.4	0.971	19.68	0	3.08
1355		300	6.72	0.58	-111.0	0.970	19.63	0	3.08
1400		300	6.72	0.44	-114.6	0.964	19.59	0	3.08
1405		300	6.75	0.38	-119.3	0.960	19.54	0	3.08
1410		300	6.83	0.29	-126.0	0.935	19.42	0	3.08
1415	✓	300	6.84	0.29	-126.6	0.925	19.40	0	3.08
1420	~3.5	300	6.90	0.30	-118.1	0.923	19.40	0	3.08
—	Sample @	1425	—						

SAMPLING

Date: 9/16/19 Time: 1425

Sample ID: OMC-MW-601S Method of Sample Collection: grab

Analytical Parameters: TAC, Cl, VOC

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-602D | Field Crew: K.Ma | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: 75°F Cloudy

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain: overgrown vegetation surrounding well nest
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/16/19 | Time: 1450 | Method: low flow

Total Well Depth (ft) = 25.95

Depth to Water (ft): = 2.65

Water Column (ft): = 23.3

1 volume = _____

Comments: KM

OBSERVATIONS

Odor: None, Low, High, (H_2S), Fuel Like, Other: - black suspended particles - water reacting w/40ml HCl vials

Comments: YSI # 10J101779 / 1112134

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1500	↓	300	7.51	0.61	-134.0	2.841	16.94	0.2	2.78
1505		300	7.33	0.37	-146.0	2.826	16.28	0	2.78
1510		300	7.35	0.28	-172.4	2.852	15.98	0	2.78
1515		300	7.46	0.25	-184.9	3.018	15.88	0	2.78
1520		300	7.48	0.23	-186.6	3.138	15.71	0	2.78
1525		300	7.44	0.21	-197.2	3.207	15.57	0	2.78
1530		300	7.40	0.21	-205.5	3.226	15.57	0	2.78
1535	~3	300	7.39	0.21	-203.9	3.234	15.49	0	2.78
		Sampled @	1540 +	1545					

SAMPLING

Date: 9/16/19 | Time: 1540 / 1545 (R)

Sample ID: OMC-MW-602D | Method of Sample Collection: grab

Analytical Parameters: VOC, TOC, Cl

Q.C. Sample Type: MS/MSD (Duplicate) | Duplicate Sample ID: OMC-MW-602D-R

Q.C. Parameters: VOC, TOC, Cl^-

Trash picked up? Y | Well locked? Y

SIGNED/SAMPLER: [signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-602S Field Crew: R.K/K.M Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: N/A No pad
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain: No lock
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/16/19 Time: 1455 Method: Low flow

Total Well Depth (ft) = 9.23

Depth to Water (ft): = 2.45

Water Column (ft): = 7.78

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1500		340	7.12	0.96	53.8	1.478	20.58	22.4	2.55
1505		340	7.06	0.41	10.3	1.442	19.96	13.6	2.55
1510		340	7.11	0.28	-42.0	1.426	19.98	8.2	2.55
1515		340	7.14	0.22	-60.2	1.428	19.78	5.1	2.55
1520		340	7.14	0.19	-68.7	1.423	19.54	3.6	2.55
1525		340	7.15	0.17	-77.5	1.422	19.34	6.5	2.55
1530		340	7.16	0.16	-82.8	1.419	19.22	1.4	2.55
1535	V 4	340	7.16	0.16	-85.3	1.418	19.13	1.8	2.55
			Sampled at 1540						

SAMPLING

Date: 9/16/19 Time: 1540

Sample ID: OMC-MW 602S Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters:

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-603D Field Crew: R. Kaliappan Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions:

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: N/A No pad
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	Acceptable	(Not Acceptable)	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: Method: Low flow

Total Well Depth (ft) = 26.54 (26.54)

Depth to Water (ft): = 2.38

Water Column (ft): = 24.16

1 volume

Comments: Drop in DTW after purging ~ 3.6 ft

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0835		320	5.94	1.07	152.1	5.442	16.22	12.3	6.04
0840		320	5.92	0.36	122.2	6.115	15.75	12.8	6.00
0845		320	5.90	0.30	98.0	6.991	15.21	0.3	6.00
0850		320	5.92	0.25	73.2	6.999	15.15	0.0	6.00
0855		320	5.93	0.23	64.8	6.987	15.02	0.5	6.00
0900		320	5.93	0.22	52.9	6.924	15.13	1.4	6.00
0905		320	5.94	0.22	41.3	6.942	15.00	0.0	6.00
0910		320	5.94	0.21	35.0	6.928	14.86	0.7	6.00
0915		320	5.95	0.17	24.0	6.878	14.85	0.0	6.0
0920		320	5.95	0.19	19.3	6.876	14.88	0.0	6.0
0925		320	5.96	0.20	13.1	6.850	14.95	0.0	6.0
0930	~5 gal	320	5.96	0.17	10.00	6.845	14.94	0.0	6.0

SAMPLING Sampled @ 0935

Date: 9/17/19 Time: 0935

Sample ID: OMC-MW603D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6035 Field Crew: K. Mg Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 70°F Cloudy

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain: N/A
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

Well nest approximately 1ft of standing water + overgrown vegetation

PURGE METHOD

Date: 9/17/19 Time: 0830 Method: low-flow

Total Well Depth (ft) = 10.97

Depth to Water (ft): = 2.77

Water Column (ft): = 8.2

1 volume

Comments:

OBSERVATIONS

Odor: (None) , Low , High , H_2S , Fuel Like , Other:

Comments: slightly yellow, no turbidity.

- At 0855, turbidity probe seems malfunctioning w/ readings over 1000 NTU, water is visually clear w/ no bubbles.

YSI SN#

FIELD PARAMETERS

Time	Volume (gal) -- (KM)	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0835	350	350	6.80	0.52	-103.1	0.981	19.19	0.5	2.80
0840	|	300	6.80	0.40	-107.8	0.981	19.07	1.3	2.80
0845	|	300	6.81	0.33	-103.9	0.990	18.96	0	2.80
0850	|	300	6.81	0.30	-94.6	0.991	18.98	0	2.80
0855	|	300	6.83	0.29	-108.3	0.993	19.00	-	2.80
0900	|	300	6.84	0.27	-112.9	0.993	19.01	-	2.80
0905	|								emptied flow through cell clean probe
	|	~~DO drops to 0.0 mg/L => switching YSI SN# 1111250~~					(KM)		
0910	|	300	6.79	0.31	-110.6	0.999	18.95	0	2.80
0915	|	300	6.80	0.31	-111.5	1.000	18.95	0	2.80
0920	N4	300	6.80	0.31	-111.5	1.000	18.95	0	2.80
		Sample @ 0925							

SAMPLING

Date: 9/17/19 Time: ~~0~~ 0925

Sample ID: OMC-MW-6035 Method of Sample Collection: grab

Analytical Parameters: VOC, TOC, Cl

Q.C. Sample Type: (MS/MSD) Duplicate Duplicate Sample ID:

Q.C. Parameters: VOC, TOC, Cl

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-604D | Field Crew: K. Mc | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: 75°F Cloudy

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: N/A
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

Well nest is surrounded w/ overgrown vegetation (~4-5 ft) & 1 foot standing water

PURGE METHOD

Date: 9/17/19 Time: 1050 Method: low flow

Total Well Depth (ft) = 30.03

Depth to Water (ft): = 2.48

Water Column (ft): = 27.55

1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments: black suspended particles, black water w/slight sheen observed.
YSI # 1111280

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1055		300	6.61	0.19	-196.7	7.695	17.19	12.2	3.23
1100		300	6.30	0.15	-182.8	8.004	17.19	89.4	3.23
1105		300	6.23	0.14	-177.9	8.120	17.06	3.4	3.23
1110	↓	300	6.23	0.14	-176.5	8.134	17.07	2.6	3.23
1115	N2	300	6.23	0.13	-176.0	8.136	17.05	6.9	3.23
—	—	Sampled @		1120	—	(8.136)	—	—	

SAMPLING

Date: 9/17/19 Time: 1120

Sample ID: OMC-MW-604D Method of Sample Collection: grab

Analytical Parameters: VOC, TOC, Cl⁻

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6045 Field Crew: R. Kalicppan Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 75° F Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: N/A No pad
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	Acceptable	(Not Acceptable)	Explain: No label Deep was labeled.
Well Label (inside)	Acceptable	(Not Acceptable)	Explain: No label (Labeled this event)
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 1000 Method: low flow

Total Well Depth (ft) = 10.66

Depth to Water (ft): = 2.26

Water Column (ft): = 8.40

1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments: YSI # 1111280

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1010		340	6.65	1.32	97.8	2.769	18.77	4.8	2.31
1015		340	6.80	0.40	72.6	2.645	18.73	3.4	2.31
1020		340	6.84	0.30	26.6	2.580	18.80	4.6	2.31
1025		340	6.87	0.23	-30.1	2.561	18.80	1.7	2.31
1030		340	6.89	0.19	-56.7	2.558	18.91	5.8	2.31
(VAS) 1035		340	6.89	0.18	-68.1	2.553	18.90	1.5	2.31
1040		340	6.90	0.17	-89.5	2.547	18.82	2.9	2.31
1045		340	6.90	0.17	-93.7	2.551	18.83	3.6	2.31
1050		340	6.91	0.16	-99.0	2.550	18.91	5.0	2.31
1055	~4 gal	340	6.91	0.15	-102.2	2.547	18.89	6.7	2.31
			Sampled @ 1100						

SAMPLING

Date: 9/17/19 Time: 1100

Sample ID: OMC-MW6045 Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-605D Field Crew: MG/JG Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: Sunny, 80°F

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	Acceptable	(Not Acceptable)	Explain: N/A
Well Label (outside)	Acceptable	(Not Acceptable)	Explain: Non-existent
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 09/19/19 Time: 1507 Method: Low flow

Total Well Depth (ft) = 27.21

Depth to Water (ft): = 4.45

Water Column (ft): = 22.76

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1509	1.7	220	6.09	0.73	-68.6	7.114	17.23	1.1	4.34
1514	2.0	220	6.05	0.22	-80.9	7.303	16.88	0.4	4.36
1519	2.3	220	6.05	0.19	-86.1	7.360	16.49	0.00	4.38
1524	2.5	226	6.06	0.17	-89.7	7.381	16.41	0.00	4.41
1529	2.8	220	6.06	0.17	-91.8	7.396	16.53	0.00	4.33

SAMPLING

Date: 09/19/19 Time: 1530/1535

Sample ID: OMC-MW-605D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: MS/MSD (Duplicate) Duplicate Sample ID: OMC-MW-605D-R

Q.C. Parameters:

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: Matt Gall

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-605S | Field Crew: TG, MG | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: 75°F Sunny

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 | Time: 1432 | Method: Low flow

Total Well Depth (ft) = 10.70

Depth to Water (ft): = 4.06

Water Column (ft): = 6.64

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments: orange particulates in water @ Start of Purge

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1435	START PURGE -								
1440	0.3	350	7.07	0.41	-26.7	1.396	20.88	20.4	4.10
1445	0.6	350	6.94	0.28	-80.8	1.392	20.69	14.7	4.10
1450	1.0	350	6.91	0.24	-99.6	1.406	20.66	7.7	4.10
1455	1.3	350	6.99	0.22	-114.1	1.443	20.71	2.5	4.10
1500	1.6	350	6.90	0.22	-118.5	1.453	20.62	0.5	4.10
1505	2.0	350	6.90	0.20	-121.0	1.470	20.58	0.0	4.10
1510	SAMPLE								

SAMPLING

Date: 9/17/19 | Time: 1510

Sample ID: OMC-MW-605S | Method of Sample Collection: GRAB

Analytical Parameters: VOCs, TOC, Cl⁻

Q.C. Sample Type: (MS/MSD) Duplicate | Duplicate Sample ID: OMC-MW-605S

Q.C. Parameters: VOCs, TOC, Cl⁻

Trash picked up? Y | Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-606D Field Crew: MG/JG Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: Sunny, 80°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: N/A
Well Label (outside)	Acceptable	Not Acceptable	Explain: Non-existant
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 091719 Time: 1248 Method: Low Flow

Total Well Depth (ft) = 27.85

Depth to Water (ft): = 5.01

Water Column (ft): = 22.84

1 volume

Comments:

OBSERVATIONS

Odor: None, Low, High, H_2S, Fuel Like, Other: Sheen a purge water

Comments: Water is grey/black dirty at first, bubbles/black flakes in water messing w/ turbidity

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1251	0.0	240	6.87	0.73	-64.3	8.700	17.35	43.7	5.60
1256	0.4	240	6.40	0.29	-78.5	8.686	17.40	94.8	6.00
1301	0.7	240	6.36	0.21	-90.2	8.958	17.29	38.9	5.99
1306	1.0	240	6.36	0.18	-97	9.108	17.46	831.2	5.97
1311	1.3	240	6.36	0.17	-97.7	9.198	17.52	840.1	5.96
1316	1.6	240	6.34	0.16	-96.9	9.204	17.23	820.9	6.02
1321	2.0	240	6.33	0.15	-96.6	9.221	17.27	22.9	5.98
1326	2.4	240	6.31	0.15	-93.7	9.243	17.15	14.1	5.99
1331	2.8	240	6.31	0.15	-95	9.259	17.08	11.1	5.96
1336	2.9	240	6.31	0.14	-91.4	9.262	17.16	11.4	5.87
1341	3.0	240	6.32	0.14	-99.6	9.255	17.12	11.5	5.80
1346									

SAMPLING

Date: 091719 Time: 1346

Sample ID: OMC-MW-606D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: Matt Dahl

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: 6065 Field Crew: JG MG Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 70F Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 1245 Method: Lowflow

Total Well Depth (ft) = 9.82

Depth to Water (ft): = 3.72

Water Column (ft): = 6.10

1 volume

Comments:

OBSERVATIONS

Odor: None Low , High , H_2S , Fuel Like , Other:

Comments:

No PSI for Start of Purge

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1250	Start Purge								
1255	-	290	-	~~8.48~~	-	-	-	-	4.00
1350	5	290	~~6.64~~ 7.22	~~7.68~~	-63.0	1.633	19.34	0.0	4.09
1355	5.5	290	7.55	0.34	-76.6	1.621	19.39	0.0	4.08
1400	5.8	275	7.69	0.21	-86.9	1.609	19.74	0.0	3.96
1405	6.0	275	7.74	0.21	-91.8	1.603	19.67	0.0	4.03
1410	6.5	275	7.81	0.19	-96.2	1.604	19.46	0.0	4.05
145	6.7	275	7.83	0.19	-97.8	1.594	19.55	0.0	4.07
1420	SAMPLE								

SAMPLING

Date: 9/17/19 Time: 1420

Sample ID: OMC-MW-6065 Method of Sample Collection: Grab

Analytical Parameters: VOCs, Toc, Cl-

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-607D Field Crew: S.G, M.G. Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 65°F Overcast

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 0805 Method: Low Flow

Total Well Depth (ft) = 27.68

Depth to Water (ft): = 2.89

Water Column (ft): = 24.79

1 volume

Comments:

OBSERVATIONS

Odor: (None) Low , High , H_2S , Fuel Like , Other:

Comments:

No PSI @ Start of Purge

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0810	Start Purge								
0815	~	210	—	—	—	—	—	—	4.02
0820		170	—	—	—	—	—	—	3.90
0850	~2.5	200	7.23	1.02	-38.8	5.126	15.89	0.0	4.06
0855	2.75	200	7.36	0.30	-98.2	5.371	15.54	0.0	4.06
0900	3.00	200	7.43	0.25	-110.3	5.416	15.42	0.0	4.06
0905	3.25	200	7.49	0.22	-122.2	5.421	15.47	0.0	4.08
0910	3.5	200	7.52	0.21	-133.9	5.428	15.32	0.0	4.08
0915	3.75	200	7.53	0.20	-139.5	5.427	15.24	0.0	4.09
0920	4.00	200	7.54	0.20	-142.4	5.418	15.28	0.0	4.09
0925	Stable								

SAMPLING

Date: 9/17/19 Time: 0925

Sample ID: OMC-MW-607D Method of Sample Collection: Grab

Fe = 0.0 mg/L

Analytical Parameters: VOCs, TOC, Cl⁻

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6075 Field Crew: MG/SG Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: cloudy, 68°F

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: N/A
Well Label (outside)	Acceptable	(Not Acceptable)	Explain: Non-existent
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 091719 Time: 0807 Method: Low flow

Total Well Depth (ft) = 9.83

Depth to Water (ft): = 3.22

Water Column (ft): = 6.61

1 volume

Comments:

OBSERVATIONS

Odor: (None) . Low . High . H_2S . Fuel Like . Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0810	0.0	320	6.71	1.15	27.4	1.248	20.36	17.2	3.24
0815	0.4	320	6.73	0.49	-77.1	1.359	20.41	1.2	3.24
0820	0.9	320	7.01	0.32	-118	1.382	20.45	0.00	3.24
0825	1.5	320	7.15	0.28	-143.6	1.384	20.46	0.00	3.24
0830	1.9	320	7.22	0.25	-153.1	1.385	20.50	0.00	3.24
0835	2.4	320	7.27	0.24	-162.1	1.379	20.50	0.00	3.24
0840	3.0	320	7.31	0.22	-158.5	1.374	20.52	0.00	3.24

SAMPLING

Date: 091719 Time: 0845

Sample ID: OMC-MW-6075 Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked?

SIGNED/SAMPLER: Matt Hall

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-612D Field Crew: K. Mg Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 75°F Sunny

WELL CONDITION

Well Pad	~~Acceptable~~	Not Acceptable	Explain:	Well vest inundated w/ ~0.5' of standing water
Protective Casing	~~Acceptable~~	Not Acceptable	Explain:	
Well Casing	~~Acceptable~~	Not Acceptable	Explain:	
Locking Cap	~~Acceptable~~	Not Acceptable	Explain:	
Well Label (outside)	~~Acceptable~~	Not Acceptable	Explain:	
Well Label (inside)	~~Acceptable~~	Not Acceptable	Explain:	
J-Plug	~~Acceptable~~	Not Acceptable	Explain:	

PURGE METHOD

Date: 9/18/19 Time: 1010 Method: low flow

Total Well Depth (ft) = 26.61

Depth to Water (ft): = 2.97

Water Column (ft): = 23.64

1 volume

Comments:

Start purge @ 1010

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments: Slight sheen observed / Yellowish water

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cmc)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
	--	--	+/- 0.1 s.u.	+/- 10%	+/- 10 mV	+/- 3%	+/- 3%	<10 NTU	--
1025		275	6.44	1.70	-2.3	4.854	16.60	5.06	4.10
1030		275	6.25	1.74	-17.1	4.818	16.66	6.14	4.10
1035		275	6.22	1.74	-18.2	4.804	16.57	6.14	4.10
1040		275	6.15	1.72	-21.1	4.771	16.75	5.72	4.02
1045		275	6.04	1.67	-23.6	4.668	16.63	4.35	4.02
1050		275	5.97	1.58	-27.0	4.601	17.54	4.68	3.72
1055		275	5.98	1.52	-28.5	4.474	17.23	4.66	3.72
1100		275	5.91	1.51	-27.3	4.501	17.61	4.91	3.72
1105	~3.5	275	5.88	1.51	-26.0	4.500	17.79	4.92	3.72
		Sample @ 1110							

SAMPLING

Date: 9/18/19 Time: 1110

Sample ID: OMC-MW-612D (612D) Method of Sample Collection: grab

Analytical Parameters: VOC, TOC, Cl

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: KW

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: 612S | Field Crew: RK/[illegible]K-M | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: Sunny

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/18/19 | Time: 1020 | Method: low flow

Total Well Depth (ft) = 10.89

Depth to Water (ft): = 3.28

Water Column (ft): = 7.61

1 volume

Comments:

OBSERVATIONS

Odor: (None) , Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1025		340	8.50	1.20	21.3	2.825	19.70	0	3.30
1030		340	7.26	0.42	-18.4	2.690	19.45	0.7	3.30
1035		340	7.10	0.27	-52.4	2.647	19.41	0.9	3.30
1040		340	7.02	0.22	-72.4	2.616	19.63	4.3	3.30
1045		340	6.98	0.20	-82.4	2.550	19.61	0.0	3.30
1050		340	6.96	0.20	-88.1	2.546	19.63	0.0	3.30
1055		340	6.94	0.19	-92.2	2.533	19.60	0.0	3.30
1100	~3.5	340	6.93	0.19	-94.9	2.531	19.77	0.0	3.30
			Sampled @ 1105						

SAMPLING

Date: 9/18/19 | Time: 1105

Sample ID: OMC-MW612S | Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: MS/MSD (Duplicate) | Duplicate Sample ID: OMC-MW612S-R 11:10

Q.C. Parameters: VOC, TOC, Chloride

Trash picked up? Y | Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: 613D | Field Crew: MG / JG | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: Sunny, 70°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: Non-existent
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: Non-existent
Well Label (outside)	Acceptable	(Not Acceptable)	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 091819 Time: 0816 Method: Low Flow

Total Well Depth (ft) = 25.78

Depth to Water (ft): = 4.05

Water Column (ft): = 21.73

1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments: Sulfur-like smell, slightly black water, sheen on water $Fe^{2+} = 1.7$

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0818	0.0	360	6.26	1.64	-130	4.142	14.69	11.1	4.05
0823	0.5	260	6.79	0.22	-272.4	4.125	14.15	6.6	5.00
0828	0.4	260	6.90	0.18	-278.2	4.108	14.45	5.7	4.80
0833	1.2	260	7.03	0.16	-280.1	4.073	14.39	2.4	4.80
0838	1.5	260	7.09	0.15	-302.9	4.061	14.14	1.7	4.81
0843	1.9	260	7.11	0.14	-305.9	4.088	14.14	0.5	4.81
0848	2.3	260	7.14	0.14	-305.6	4.080	14.32	0.0	4.80

SAMPLING

Date: 091819 Time: 0850

Sample ID: ~~OMC-61~~ OMC-MW-613D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: Matt

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-613S | Field Crew: JG, MG | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: 65°F Sunny

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/18/19 | Time: 0812 | Method: Low Flow

Total Well Depth (ft) = 10.95

Depth to Water (ft): = 3.88

Water Column (ft): = 7.07

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0815	START PURGE								
0820	0.3	270	7.03	0.24	-20.5	2.109	19.29	3.74	4.94
0825	0.6	250	7.24	0.08	-53.6	2.139	18.89	1.82	5.09
0830	1.0	250	7.30	0.06	-76.4	2.151	18.56	1.66	5.06
0835	1.3	250	7.36	0.03	-72.1	2.155	18.27	1.70	5.08
0840	1.6	250	7.40	0.12	-66.6	2.154	18.20	1.24	5.11
0845	2.0	250	7.42	0.11	-60.2	2.150	18.23	1.17	5.14
0850	2.3	250	7.45	0.06	-65.7	2.141	18.57	1.24	5.15
0855	2.6	250	7.45	0.02	-82.2	2.143	18.41	1.08	5.16
0900	3.0	250	7.46	0.02	-74.9	2.142	18.45	1.14	5.20
0905	3.3	250	7.44	0.02	-103.3	2.140	18.02	1.02	5.21
~~0910~~	~~SAMPLE~~								JG

SAMPLING

Date: 9/18/19 | Time: ~~0910~~ JG 0920

Sample ID: OMC-MW-613S | Method of Sample Collection: Grab

Analytical Parameters: VOCs, TOC, Cl⁻

Q.C. Sample Type: N/A MS/MSD Duplicate | Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y | Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6135 Field Crew: JG MG Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 65°F Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

See page 1

PURGE METHOD

Date: Time: Method:

Total Well Depth (ft) =

Depth to Water (ft): =

Water Column (ft): =

1 volume

Comments:

See page 1

OBSERVATIONS

Odor: (None) Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0910	3.6	225	7.45	0.02	-109.7	2.140	7.45	1.05	5.23
0915	4.0	225	7.46	0.02	-112.9	2.139	7.46	1.03	5.24
0920	SAMPLE								

SAMPLING

Date: Time:

Sample ID: Method of Sample Collection:

Analytical Parameters:

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters:

See page 1

Trash picked up? Well locked?

SIGNED/SAMPLER: See page 1

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-614D Field Crew: R-K/KM Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions:

p.1 of 2

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 1520 Method: Low flow

Total Well Depth (ft) = 29.82

Depth to Water (ft): = 2.83

Water Column (ft): = 26.99

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1525		340	9.41	8.15	15.0	0.105	23.35	3.6	3.15
1530		300	7.76	0.68	35.5	9.975	16.38	13.1	8.65
1535		300	7.64	0.30	31.6	10.01	16.21	2.0	10.45
1540		300	7.63	0.16	18.4	10.29	16.04	3.2	13.05
1545		300	7.64	0.14	-2.4	10.40	16.50	2.1	13.42
1550		250	7.67	0.13	-36.7	10.58	16.90	5.1	14.33
1555		250	7.68	0.13	-53.9	10.70	16.88	2.2	15.05
1600		250	7.71	0.12	-94.1	10.90	17.09	0.7	15.88
1605		250	7.75	0.12	-118.7	11.13	17.10	3.0	16.48
1610		250	7.78	0.12	-137.6	11.35	16.90	2.3	17.00
1615		200	7.81	0.12	-150.9	11.46	16.96	1.5	17.20
1620		200	7.83	0.12	-159.2	11.56	16.94	1.0	17.38

SAMPLING

Date: 9/17/19 Time: 1640

Sample ID: OMC-MW614D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-614D, Field Crew: Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions:

p2. of 2

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 1520 Method: low flow

Total Well Depth (ft) = 29.82

Depth to Water (ft): = 2.83

Water Column (ft): = 26.99

1 volume

Comments:

OBSERVATIONS

Odor: None, Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1625		200	7.86	0.11	-166.4	11.72	16.84	0.8	17.60
1630		200	7.88	0.11	-170.8	11.81	16.74	5.5	17.75
1635	~4gal	200	7.90	0.11	-174.2	11.91	16.61	5.5	17.93
			Sampled @ 1640						

SAMPLING

Date: 9/17/19 Time: 1640

Sample ID: OMC-MW614D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-614S Field Crew: K. Mg Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 80°F sunny

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain: Well mst ~ 0.5' of standing water
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 1520 Method: low flow

Total Well Depth (ft) = 10.78

Depth to Water (ft): = 2.88

Water Column (ft): = 7.90

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1525		200	7.37	7.64	88.7	1.051	20.97	97.7	2.98
1530		250	6.80	0.18	102.0	1.066	19.58	7.30	2.98
1535		250	6.78	0.11	99.2	1.065	19.53	3.07	2.98
1540		250	6.80	0.13	81.9	1.033	19.40	1.90	9.2-98
1545		250	6.82	0.10	72.6	1.014	19.41	1.90	2.98
1550		250	6.83	0.11	65.8	0.996	19.46	1.90	2.98

SAMPLING

Date: 9/17/19 Time: 1555

Sample ID: OMC-MW-614S Method of Sample Collection: grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: 615D | Field Crew: R.R/K.M | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: Sunny

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 1300 Method: Low flow

Total Well Depth (ft) = 27.35

Depth to Water (ft): = 3.90

Water Column (ft): = 23.45

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1300		340	8.74	0.74	72.0	6.353	19.98	12	5.80
1305		340	9.31	0.28	55.2	6.327	19.27	3.1	6.02
1310		340	9.35	0.22	48.4	6.329	18.42	2.1	6.02
1315		340	9.45	0.18	42.7	6.679	16.86	2.1	6.02
1320		340	9.53	0.14	37.3	7.335	16.38	3.3	6.02
1325		340	9.60	0.13	28.8	7.793	16.36	4.0	6.02
1330		340	9.68	0.12	7.5	8.078	16.26	4.4	6.02
1335		340	9.75	0.11	-84.5	8.251	16.17	1.3	6.02
1340		340	9.78	0.11	-224.2	8.297	16.15	1.6	6.02
1345		340	9.79	0.11	-298.5	8.287	16.24	1.3	6.02
1350		340	9.81	0.10	-333.5	8.286	16.10	1.2	6.02
1355		340	9.82	0.10	-357.3	8.292	16.17	1.0	6.02

SAMPLING

Date: 9/17/19 Time: Set p2

Sample ID: OMC-MW 615D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters:

Trash picked up? Y Well locked?

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: 615D | Field Crew: R.K / E.Ma | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 1300 Method: Low flow

Total Well Depth (ft) = 27.35

Depth to Water (ft): = 3.90

Water Column (ft): =

1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments: Fumes from VOC vials while filling

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1400		340	9.82	0.10	-384.5	8.270	16.18	1.7	6.02
1405		340	9.83	0.10	-403.6	8.212	16.24	1.1	6.02
1410		340	9.83	0.10	-420.8	8.249	16.49	0.4	6.02
1415		340	9.83	0.10	-432.5	8.269	16.63	0.1	6.02
1420		340	9.83	0.10	-443.4	8.269	16.73	0.3	6.02
1425		340	9.81	0.10	-448.3	8.257	16.62	0.0	6.02
1430		340	9.81	0.10	-454.8	8.262	16.65	0.0	6.02
1435		340	9.81	0.10	-460.3	8.235	16.59	0.0	6.02
1440		340	9.81	0.10	-464.5	8.229	16.62	0.0	6.02
			Sampled @ 1445						

SAMPLING

Date: 9/17/19 Time: 1445

Sample ID: OMC-MW615D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters:

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: 6155 Field Crew: R.K/K.M Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 1300 Method: Low flow

Total Well Depth (ft) = 11.42

Depth to Water (ft): = 4.35

Water Column (ft): = 7.07

1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1320		340	7.55	4.66	150.1	0.675	20.91	11.1	4.40
1325		340	7.14	0.22	127.1	0.670	20.39	3.88	4.40
1330		340	7.06	0.12	96.0	0.666	20.25	1.70	4.40
1335		340	7.02	0.20	64.7	0.665	20.11	1.52	4.40
1340		340	7.11	0.18	45.2	0.666	20.10	1.42	4.40
1345		340	7.18	0.12	16.4	0.664	20.23	1.36	4.40
1350		340	7.15	0.16	7.8	0.666	20.04	1.57	4.40
1355		340	7.15	0.15	-6.6	0.663	20.18	1.40	4.40
1400		340	7.15	0.16	-14.5	0.662	20.26	1.35	4.40
1405		340	7.14	0.14	-24.5	0.659	20.22	1.52	4.40
1410		340	7.12	0.14	-35.9	0.659	20.17	1.46	4.40
1415	↓	340	7.09	0.12	-38.6	0.658	20.26	1.39	4.40
1420	≈5gal	340	7.06	0.12 SAMPLING	-39.8	0.655	20.24	1.40	4.40

Date: 9/17/19 Time: 1425 Sampled @1425

Sample ID: OMC-MW6155 Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked?

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-619D Field Crew: MG/JG Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: Cloudy, 72°F

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: N/A
Well Label (outside)	Acceptable	(Not Acceptable)	Explain: Non-existent
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 091719 Time: 1027 Method: Low flow

Total Well Depth (ft) = 29.66

Depth to Water (ft): = 4.23

Water Column (ft): = 25.37

1 volume

Comments:

OBSERVATIONS

Odor: (None), Low, High, H_2S, Fuel Like, Other:

Comments: Yellowish water

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1030	2.6	240	7.94	0.93	-35	4.724	16.41	20.5	4.23
1035	2.7	240	8.15	0.23	-194.4	5.008	15.06	15	4.26
1040	3.0	240	8.18	0.17	-221.5	4.988	14.74	4	4.26
1045	3.3	240	8.20	0.15	-222.4	4.999	14.87	0	4.25
1050	3.7	240	8.22	0.13	-223.8	5.016	14.98	0.00	4.25

SAMPLING

Date: 091719 Time: 1055

Sample ID: OMC-MW-619D Method of Sample Collection: Grab

Analytical Parameters: TOC, VOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: Matt Dalsky

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6195 Field Crew: JG, MG Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 65°F Overcast

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: Sinking
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 9/17/19 Time: 0935 Method: low flow

Total Well Depth (ft) = 10.89

Depth to Water (ft): = 3.78

Water Column (ft): = 7.11

1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0940	Start Purge								
0945	-	250	8.03	0.66	38.6	1.543	19.52	2.5	3.83
0950	0.7	250	7.82	0.33	12.4	1.470	19.21	0.0	3.83
0955	1.0	250	7.21	0.27	-19.8	1.461	19.14	0.0	3.83
1000	1.3	250	7.66	0.27	-34.3	1.460	19.12	0.0	3.83
1005	1.6	250	7.63	0.25	-51.2	1.457	19.16	0.0	3.83
1010	2.0	250	7.60	0.23	-64.9	1.454	19.17	0.0	3.82
1015	2.3	250	7.58	0.22	-77.4	1.451	19.14	0.0	3.82
1020	2.7	250	7.57	0.21	-82.5	1.449	19.22	0.0	3.82
1025	3.0	250	7.56	0.21	-86.1	1.446	19.25	0.0	3.82
1030	SAMPLE								

SAMPLING

Date: 9/17/19 Time: 1030

Sample ID: OMC-MW-6195 Method of Sample Collection: Grab

Analytical Parameters: VOCs, TOC, Cl⁻

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-620D Field Crew: MG/JG Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: Sunny, 75°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain: Non-existent
Well Label (inside)	Acceptable	Not Acceptable	Explain: Non-existent
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 09/16/19 Time: 1347 Method: Low Flow

Total Well Depth (ft) = 30.72

Depth to Water (ft): = 5.2

Water Column (ft): = 25.52

1.02 gal / 1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments: Sulfur-like smell, bubbles in water (causing turbidity to jump around)

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1348	0.1	240	6.86	0.25	-323.8	5.418	17.84	150.9	5.19
1355	0.3	240	6.93	0.22	-330.8	5.529	17.75	175	5.19
1400	0.5	240	7.15	0.18	-349.6	5.739	17.21	369.1	5.24
1405	0.8	240	7.28	0.16	-358.3	5.835	16.99	78.4	5.25
1410	1.2	240	7.33	0.15	-367.4	5.893	16.95	65.1	5.25
1415	1.6	240	7.37	0.14	-364	5.904	17.42	9.5	~~5.25~~ 5.20
1420	2.0	240	7.39	0.14	-363.5	5.927	17.42	9.4	5.21
1425	2.5	240	7.41	0.13	-363.3	5.931	17.31	8.0	5.22

SAMPLING

Date: 09/16/19 Time: 1430

Sample ID: ~~MW-620D~~ OMC-MW-620D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: Matt Gulash

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6205 Field Crew: J. Graham / M. Gerlach Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 70°F Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 9/16/19 Time: 1345 Method: Low Flow

Total Well Depth (ft) = 11.02

Depth to Water (ft): = 4.16

Water Column (ft): = 6.86

1 volume

Comments:

No YSI @ Start of purge due to equipment malfunction

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments: Black Particulates

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1350	START	PURGE							
1355		150							4.26
1405		150							4.30
1435	~1.5	150	7.22	0.20	-222.2	2.418	21.05	2.8	4.31
1440	~1.K	150	7.01	0.16	-223.8	2.368	20.99	0.5	4.31
1445	~2.00	150	6.96	0.15	-226.5	2.310	21.28	0.0	4.31
1450	~2.5	150	6.94	0.15	-230.0	2304	21.14	0.0	4.32
1455	SAMPLE								

SAMPLING

Date: 9/16/19 Time: 1455

Sample ID: OMC-MW-6205 Method of Sample Collection: Grab

Analytical Parameters: VOCs, TOC, Cl⁻

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well Locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: 621D | Field Crew: MG/JG | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: Sunny, 80°F

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain:
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: Non-existent
Well Label (outside)	Acceptable	(Not Acceptable)	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

Sprayed bee spray on well cap

PURGE METHOD

Date: 091819 Time: 1040 Method: Low flow

Total Well Depth (ft) = 29.69

Depth to Water (ft): = 4.50

Water Column (ft): = 25.19

1 volume

Comments:

OBSERVATIONS

Odor: (None) , Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1047	1.3	240	6.50	0.41	-63.9	6.377	16.38	33.8	6.54
1052	0.9	240	6.48	0.30	-68.1	5.406	16.23	19	6.82
1057	1.2	240	6.47	0.24	-71.8	5.454	16.06	7.2	7.29
1102	1.6	240	6.47	0.22	-73.8	5.512	16.11	6.5	6.89
1107	1.8	240	6.46	0.20	-74.8	5.537	16.13	5.7	6.78

SAMPLING

Date: 091819 Time: 1110

Sample ID: OMC-MW-621D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: Matt Zahl

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-C21S | Field Crew: BG, MG | Purpose of Sampling: OMC Quarterly Sampling

Site: OMC | Field Conditions: 70°F Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

Tubing was getting caught @ approx 5.5 ft btoc. The water level meter made it past but the tubing needed to be forced down. Possible reset broken off from screen.

PURGE METHOD

Date: 9/18/19 | Time: 1038 | Method: Low Flow

Total Well Depth (ft): - 10.90

Depth to Water (ft): - 4.40

Water Column (ft): - 6.50

1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1140	Start Purge								
1145	0.3	250	7.83	0.59	-148.5	2.653	19.32	70.0	5.16
1150	0.6	250	7.47	0.17	-132.0	2.357	19.26	20.7	5.13
1155	1.0	250	7.28	0.15	-128.1	2.213	19.19	9.03	5.15
1200	1.3	250	7.20	0.11	-206.2	2.127	19.17	5.92	5.16
1205	1.6	250	7.16	0.19	-116.3	2.092	19.05	4.70	5.15
1210	2.0	250	7.14	0.19	-116.6	2.070	19.02	4.14	5.15
1215	2.3	250	7.13	0.18	-120.5	2.034	19.04	3.96	5.16
1220	SAMPLE								

SAMPLING

Date: 9/18/19 | Time: 1220

Sample ID: OMC-MW-C21S | Method of Sample Collection: Grab

Analytical Parameters: VOCs, TOC, Cl⁻

Q.C. Sample Type: MS/MSD (Duplicate) | Duplicate Sample ID: OMC-MW-C21S-R @ 1225

Q.C. Parameters: VOCs, TOC, Cl⁻

Trash picked up? Y | Work locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-625D Field Crew: R.K / K.M Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: Partly cloudy

WELL CONDITION

Well Pad	(Acceptable)	Not Acceptable	Explain: Pad is loose.
Protective Casing	(Acceptable)	Not Acceptable	Explain:
Well Casing	(Acceptable)	Not Acceptable	Explain:
Locking Cap	(Acceptable)	Not Acceptable	Explain:
Well Label (outside)	(Acceptable)	Not Acceptable	Explain:
Well Label (inside)	(Acceptable)	Not Acceptable	Explain:
J-Plug	(Acceptable)	Not Acceptable	Explain:

PURGE METHOD

Date: 9/18/19 Time: 0830 Method: Low flow

Total Well Depth (ft) = 30.00

Depth to Water (ft): = 3.18

Water Column (ft): = 26.82

1 volume

Comments:

OBSERVATIONS

Odor: (None) Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0840		300	6.99	1.78	219.4	5.423	15.60	1.6	3.50
0845		300	7.86	1.00	200.8	5.326	15.40	0.6	3.50
0850		300	8.39	0.37	189.6	5.254	15.34	0.0	3.50
0855		300	8.61	0.27	174.6	5.235	15.28	0.0	3.50
0900		300	8.70	0.22	148.9	5.224	15.25	0.0	3.50
0905		300	8.72	0.19	121.6	5.204	15.11	0.0	3.50
0910		300	8.73	0.18	88.1	5.182	14.99	0.0	3.50
0915		300	8.74	0.15	40.1	5.216	15.14	0.0	3.50
0920		300	8.75	0.16	13.5	5.238	15.48	0.0	3.50
0925		300	8.75	0.15	-14.2	5.265	15.66	0.0	3.5
0930		300	8.77	0.15	-60.0	5.296	15.91	0.0	3.5
0935		300	8.76	0.15	-93.4	5.314	15.98	0.0	3.5

SAMPLING

Date: 9/18/19 Time: 1005

Sample ID: OMC-MW625D Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, & Cl

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW 625D Field Crew: RK/ICm Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions:

WELL CONDITION

Well Pad	(Acceptable) / Not Acceptable	Explain:	Pad is loose
Protective Casing	(Acceptable) / Not Acceptable	Explain:	See Page 1
Well Casing	(Acceptable) / Not Acceptable	Explain:	
Locking Cap	(Acceptable) / Not Acceptable	Explain:	
Well Label (outside)	(Acceptable) / Not Acceptable	Explain:	
Well Label (inside)	(Acceptable) / Not Acceptable	Explain:	
J-Plug	(Acceptable) / Not Acceptable	Explain:	

PURGE METHOD

Date: 9/18/19 Time: 0830 Method: Low flow

Total Well Depth (ft) = 30.0 (30.0)

Depth to Water (ft): = 3.18

Water Column (ft): =

1 volume

Comments:

OBSERVATIONS

Odor: (None) , Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0940		300	8.76	0.15	-129.3	5.329	16.15	0.0	3.5
0945		300	8.75	0.14	-156.3	5.340	16.13	0.0	3.5
0950		300	8.74	0.14	-170.0	5.330	16.10	0.0	3.5
0955		300	8.74	0.14	-172.9	5.330	16.02	0.0	3.5
1000	NG	300	8.74	0.13	-179.5	5.317	15.98	0.0	3.5

SAMPLING

Date: 9/18/19 Time: 1005

Sample ID: OMC-MW 625D Method of Sample Collection: Grab

Analytical Parameters:

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters:

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-625S Field Crew: K.Ma Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 75°F Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: Upheaving Well vest inundated w/ 0.5-1' of standing water
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 9/18/19 Time: 0840 Method: low flow

Total Well Depth (ft) = 11.68

Depth to Water (ft): = 2.62

Water Column (ft): = 9.06

1 volume

Comments:

OBSERVATIONS

Odor: None, Low, High, H_2S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
0845	↓	230	7.04	0.84	124.1	0.593	19.06	3.55	2.62
0850		250	6.75	0.20	124.7	0.590	18.90	3.55	2.62
855		250	6.80	0.19	118.5	0.590	18.99	1.62	2.62
0900		250	6.85	0.29	113.2	0.590	18.74	0.94	2.62
0905		250	7.00	0.16	106.1	0.588	18.61	0.96	2.62
0910		250	7.02	0.14	103.5	0.588	18.72	0.50	2.62
0915	↓	250	7.03	0.13	102.2	0.587	18.77	0.50	2.62
0920	≈2.5	250	7.05	0.13	101.1	0.587	18.88	0.50	2.62
—	Sample @		0925	—	—				

SAMPLING

Date: 9/18/19 Time: 0925

Sample ID: OMC-MW-625S Method of Sample Collection: grab

Analytical Parameters:

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-626D Field Crew: J. Graham Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: 70°F Overcast

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: No lock
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 9/16/19 Time: 1517 Method: Low flow

Total Well Depth (ft) = 29.34

Depth to Water (ft): = 5.37

Water Column (ft): = 23.97

1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments: Milky white @ Start of purge

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1517	START PURGE								
1520	—	210	7.46	1.27	-110.1	3.715	15.65	65.6	5.86
1525	~0.5	210	7.21	0.44	-145.7	4.008	15.41	32.6	5.86
1530	~0.75	210	7.24	0.28	-159.3	4.378	15.08	7.6	5.87
1535	1.0	210	7.31	0.25	-147.7	4.528	14.91	3.4	5.89
1540	1.25	210	7.35	0.22	-139.5	4.599	14.82	0.7	5.90
1545	1.5	210	7.37	0.20	-130.2	4.649	14.82	0.4	5.86
1550	1.75	210	7.39	0.20	-132.2	4.688	14.84	0.1	5.86
1555	SAMPLE								

SAMPLING

Date: 9/16/19 Time: 1555

Sample ID: OMC-MW-626D Method of Sample Collection: Grab

Analytical Parameters: VOCs, TOC, Cl⁻

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked?

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6265 Field Crew: MB/JG Purpose of Sampling: OMC Quarterly Sampling

Site: OMC Field Conditions: Sunny, 75°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: N/A
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: N/A
Well Label (outside)	Acceptable	Not Acceptable	Explain: Non-existant
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 091619 Time: 1553 Method: Low flow

Total Well Depth (ft) = 12.51

Depth to Water (ft): = 5.25

Water Column (ft): = 7.26

1 volume

Comments:

OBSERVATIONS

Odor: None , Low , High , H_2S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal) --	Rate (mL/min) --	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cmc) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) --
1555	2.5	200	7.39	0.85	-89.8	2.473	17.38	0.00	5.25
1600	2.8	200	7.26	0.31	-112.6	2.374	17.38	0.00	5.25
1605	3.2	200	7.22	0.21	-117.9	2.374	17.39	0.00	5.25
1610	3.8	200	7.21	0.18	-106	2.367	17.40	0.00	5.25
1615	4.2	200	7.20	0.18	-115.2	2.367	17.39	0.00	5.25

SAMPLING

Date: 091619 Time: 1620

Sample ID: SMB-MW-6265 Method of Sample Collection: Grab

Analytical Parameters: VOC, TOC, Chloride

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: Matt Gaby

Attachment 2
Data Usability Evaluation

Data Usability Evaluation—September 2019 OMC Plant 2 Site (OU4), Waukegan, Illinois WA No. 237-RARA-0528, Contract No. EP-S5-06-01

PREPARED FOR: U.S. Environmental Protection Agency

PREPARED BY: Nichole Boyea/CH2M HILL, Inc. (CH2M)

DATE: February 3, 2020

This memorandum presents the results of the usability evaluation of groundwater data from the Outboard Marine Corporation (OMC) Plant 2 Site in Waukegan, Illinois. Groundwater samples were collected September 16 through 18, 2019, and analyzed by either the subcontract laboratory, Katahdin Analytical, or a laboratory in the U.S. Environmental Protection Agency's (EPA's) Contract Laboratory Program (CLP). The analytical results will be used to evaluate the performance of the in situ treatment of the remining high-concentration source areas and the sitewide monitored natural attenuation remedy.

- Forty-six aqueous samples, including quality assurance (QA)/quality control (QC) samples (4 field duplicates [FDs], 2 matrix spikes [MSs], 2 matrix spike duplicates [MSDs], 2 trip blanks [TBs], 1 equipment blank [EB], and 1 field blank [FB]), were analyzed for volatile organic compounds (VOCs).
- Forty-four samples were analyzed for monitored natural attenuation (MNA) parameters (chloride and total organic carbon [TOC]), including QA/QC samples (4 FDs, 2 MSs, 2 MSDs, 1 EB, and 1 FB).

Table 1 lists the parameters, methods, and the laboratory performing the analysis.

Table 1. Analytical Parameters
Data Usability Evaluation—September 2019
OMC Plant 2 Site (OU4), Waukegan, Illinois

Parameter Class	Method	Laboratory Type	Laboratory
VOCs	CLP SOW SOM02.4	CLP Laboratory	ALS Laboratory Group Salt Lake City, UT
Chloride	EPA 300.0	Subcontract Laboratory	Katahdin Analytical Services Scarborough, Maine
TOC	SW846 9060	Subcontract Laboratory	

As part of the QA process outlined in the site-specific quality assurance project plan (QAPP) (CH2M 2013), QAPP Addendum II (CH2M 2017), and QAPP Addendum III (CH2M 2019), QC samples were collected in the field to complement the assessment of overall data quality and usability. The QC samples consisted of FDs, aliquots for laboratory MS/MSD, FB, EB, and VOC TB samples. Table 2 presents the sample delivery groups (SDGs), sample identifications (IDs), and station locations.

Table 2. Sample Delivery Groups
Data Usability Evaluation—September 2019
OMC Plant 2 Site (OU4), Waukegan, Illinois

	CLP Laboratory		Subcontract Laboratory	
Station Location	**Sample ID**	**VOC SDG**	**Sample ID**	**MNA[1] SDG**
OMC-MW-600D	ETFA2	ETFB5	19CW03-01	SM9819
OMC-MW-600S	ETFA3	ETFB5	19CW03-02	SM9819
OMC-MW-601D	ETFA4	ETFA4	19CW03-03	SM9753
OMC-MW-601S	ETFA5	ETFA4	19CW03-04	SM9753
OMC-MW-602D	ETFA6	ETFA4	19CW03-05	SM9753
OMC-MW-602D-R	ETFA7	ETFA4	19CW03-06	SM9753
OMC-MW-602S	ETFA8	ETFA4	19CW03-07	SM9753
OMC-MW-603D	ETFA9	ETFA4	19CW03-08	SM9753
OMC-MW-603S	ETFB0	ETFA4	19CW03-09	SM9753
OMC-MW-604D	ETFB1	ETFA4	19CW03-10	SM9753
OMC-MW-604S	ETFB2	ETFA4	19CW03-11	SM9753
OMC-MW-605D	ETFB3	ETFA4	19CW03-12	SM9753
OMC-MW-605D-R	ETFB4	ETFA4	19CW03-13	SM9753
OMC-MW-605S	ETFB5	ETFB5	19CW03-14	SM9753
OMC-MW-606D	ETFB6	ETFA4	19CW03-15	SM9753
OMC-MW-606S	ETFB7	ETFA4	19CW03-16	SM9753
OMC-MW-607D	ETFB8	ETFA4	19CW03-17	SM9753
OMC-MW-607S	ETFB9	ETFA4	19CW03-18	SM9753
OMC-MW-612D	ETFC0	ETFB5	19CW03-19	SM9819
OMC-MW-612S	ETFC1	ETFB5	19CW03-20	SM9819
OMC-MW-612S-R	ETFC2	ETFB5	19CW03-21	SM9819
OMC-MW-613D	ETFC3	ETFB5	19CW03-22	SM9819
OMC-MW-613S	ETFC4	ETFB5	19CW03-23	SM9819
OMC-MW-614D	ETFC5	ETFA4	19CW03-24	SM9753
OMC-MW-614S	ETFC6	ETFA4	19CW03-25	SM9753
OMC-MW-615D	ETFC7	ETFA4	19CW03-26	SM9753
OMC-MW-615S	ETFC8	ETFA4	19CW03-27	SM9753
OMC-MW-619D	ETFC9	ETFA4	19CW03-28	SM9753
OMC-MW-619S	ETFD0	ETFB5	19CW03-29	SM9753
OMC-MW-620D	ETFD1	ETFB5	19CW03-30	SM9753
OMC-MW-620S	ETFD2	ETFB5	19CW03-31	SM9753

Table 2. Sample Delivery Groups
Data Usability Evaluation—September 2019
OMC Plant 2 Site (OU4), Waukegan, Illinois

	CLP Laboratory		Subcontract Laboratory	
Station Location	**Sample ID**	**VOC SDG**	**Sample ID**	**MNA[1] SDG**
OMC-MW-621D	ETFD3	ETFB5	19CW03-32	SM9819
OMC-MW-621S	ETFD4	ETFB5	19CW03-33	SM9819
OMC-MW-621S-R	ETFD5	ETFB5	19CW03-34	SM9819
OMC-MW-625D	ETFD6	ETFB5	19CW03-35	SM9819
OMC-MW-625S	ETFD7	ETFD7	19CW03-36	SM9819
OMC-MW-626D	ETFD8	ETFB5	19CW03-37	SM9753
OMC-MW-626S	ETFD9	ETFB5	19CW03-38	SM9753
OMC-EB091719	ETFE0	ETFB5	19CW03-39	SM9753
OMC-FB091719	ETFE1	ETFB5	19CW03-40	SM9753
OMC-TB091719	ETFE3	ETFB5	-	-
OMC-TB091819	ETFE2	ETFD7	-	-

[1] MNA includes chloride and total organic carbon (TOC)

Subcontract Laboratory Data

Chloride and TOC were analyzed by Katahdin Analytical and reported in SDGs SM9753 and SM9819. CH2M performed a level III review on 100 percent of the data, which included 34 native samples (2 of which were designated as MS/MSD samples), 4 FD samples, 1 EB, and 1 FB, for a total of 40 field samples.

The data were reviewed to assess their analytical accuracy, precision, and completeness. The review was conducted in accordance with the site-specific QAPP (CH2M 2013). A forms review was conducted on 100 percent of the definitive data.

The forms review consisted of a review of the following QC items:

- Holding times and sample receipt conditions
- Required QC samples at the specified frequencies
- Laboratory control sample precision and accuracy
- MS/MSD precision and accuracy
- Blank contamination and, if any, its impact on the analytical results
- Initial calibration and continuing calibration precision and accuracy
- Laboratory and FD precision
- Method Reporting Limit check precision and accuracy

The QA/QC limits implemented during the data quality evaluation were those listed in the site-specific QAPP. Standard data qualifiers were added as a means of classifying the data as to their conformance to QA/QC requirements. The data qualifiers are defined as follows:

[J] Estimated. The analyte was below the stated reporting limit (RL), but greater than the method detection limit, or there is an analytical bias.

[J+] Biased High. The analyte was positively identified, but the associated numerical value is approximate (metals only).

[J-] Biased Low. The analyte was positively identified, but the associated numerical value is approximate (metals only).

[U] Undetected. The analyte was analyzed for but not detected at a concentration equal to or greater than the laboratory RL.

[UJ] Estimated. The component was analyzed for but was not detected at a level equal to or greater than the level of detection. This flag is used when QC measurements indicate a possible low bias in the analytical data.

The analytical results were within project control limits, except where noted in the following sections. Attachment 1 lists the validator applied qualifiers.

Blank Samples

Blank samples were analyzed at required frequencies, with the following exceptions to accuracy and precision criteria:

- Method blanks were analyzed as required, and generally accuracy and precision criteria were met, with the following exceptions:
  - In SDG SM9753, TOC was detected below the RL in method blank sample WG264092-1. The associated samples were detected above the RL at a concentration greater than 5 times the blank, and no qualification was required.
  - In SDG SM9753, TOC was detected below the RL in method blank sample WG264079-1. The associated samples were detected above the RL at a concentration greater than 5 times the blank and no qualification was required.
- The FB (19CW03-40), included in SDG SM9753 and associated with the samples collected on September 17, 2019, had detected concentrations of TOC below the RL. The associated samples were detected above the RL at concentrations exceeding 5 times the blank concentration, and no qualification was required.
- The EB (19CW03-39), included in SDG SM9753, had detected concentrations of TOC below the RL. The samples collected during this field event are associated with this blank, and the samples were detected above the RL at concentrations greater than 5 times the blank, and no qualification was required.

Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the appropriate frequency, and generally accuracy and precision criteria were met, with the following exceptions:

- In SDG SM9753, chloride exceeded the lower control limit for percent recovery (%R) in samples 19CW03-14 MS and MSD. Chloride was detected in parent sample 19CW03-14 and was therefore qualified as estimated “J-”.
- In SDG SM9819, sample 19CW03-01 MS exceeded the lower control limit for percent recovery (%R) for chloride. Chloride was detected in parent sample 19CW03-01 and was therefore qualified as estimated “J-”.

Field Duplicates

A total of 4 FD samples were collected for chloride and TOC analysis, meeting the minimum frequency of 1 per 10 field samples. FD samples were collected immediately following the parent sample and analyzed for

the same parameters. The precision criteria, a relative percent difference (RPD) of less than 30 percent, was met for the analytes and no qualification was required.

Contract Laboratory Program Data

The samples were analyzed for VOCs by a laboratory in EPA's CLP. EPA's Environmental Service Assistance Team (ESAT) contractor, TechLaw, reviewed the data set from the laboratory to assess the accuracy and precision of the method and the matrix using criteria established in the National Functional Guidelines (EPA 2017) (NFG) and verified that the data set was complete. ESAT validators also added data qualifiers when the QC statistics indicated a possible bias to specific compounds or analytes associated with a particular method and sample batch.

Standard data qualifiers are a means to classify the data with regard to their conformance to QC requirements. The applied data qualifiers are defined as follows:

[U] The analyte was analyzed for but was not detected above the reported sample quantitation limit.

[J] The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

[J+] The result is an estimated quantity; the results may be biased high.

[J-] The result is an estimated quantity; the results may be biased low.

[UJ] The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and to precisely measure the analyte in the sample.

[R] The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

CH2M reviewed the validation performed by Techlaw for the groundwater samples in Case Number 48482; SDG numbers ETFA4, ETFB5, and ETFD7. The VOC data set includes 34 native samples (of which 2 were designated MS/MSD samples), 4 FD samples, 1 FB, and 1 EB, and 2 TBs for a total of 42 field samples.

The EPA validation case narrative worksheets indicate that some sample results should be qualified as estimated based on the applicable QC statistics or other National Functional Guidelines requirements. Attachment 1 lists the CH2M validator applied qualifiers. Attachment 2 contains the ESAT narratives and worksheets.

Validation of Field Quality Control Samples

EPA's ESAT validators, Techlaw, reviewed field QC samples, including field and EB samples, and FDs, but did not qualify results. CH2M validators reviewed the aforementioned field QC samples and VOC TB samples in accordance with the QAPP. QC criteria were generally met, except where outlined in the following section:

Blanks

Blank samples were analyzed at required frequencies, including 1 EB, 1 FB, and 2 TBs. Exceptions to accuracy and precision criteria are outlined below.

- In TB ETFE2 (reported in SDG ETFD7), toluene was detected below the RL. This TB is associated with the samples shipped September 18, 2019. Associated samples in SDG ETFB5 include ETFA2, ETFA3, ETFC0, ETFC1, ETFC2, ETFC3, ETFC4, ETFD3, ETFD4, ETFD5, and ETFD6. The samples in SDG ETFD7 are associated with this blank.
  - In SDG ETFB5, toluene was detected below the RL in samples ETFA2, ETFA3, ETFC0, ETFC2, ETFD3, ETFD4, and ETFD5. These samples were qualified nondetect "U" and reported at the RL, per NFG

criteria. The other associated samples in this SDG were nondetect for toluene and required no qualification.

  - In SDG ETFD7, the associated samples were nondetect for toluene, and no qualification was required.

- In TB ETEF3 (reported in SDG ETFB5), acetone and toluene were detected below the RL. This TB is associated with the samples shipped September 17, 2019. The samples in SDG ETFA4 are associated with this blank. Associated samples in SDG ETFB5 include ETFE0, ETFE1, ETFE3, ETFB5, ETFD0, ETFD1, ETFD2, ETFD8, and ETFD9.
  - In SDG ETFA4, acetone in samples ETFB6 and ETFC7 were detected above the RL at a concentration exceeding 5 times the blank and required no qualification. Acetone was detected above the RL in sample ETFC5, but at a concentration less than 5 times the blank. This sample was originally qualified "U" and reported to 2 times the RL by ESAT validators due to method blank contamination. CH2M validators kept the "U" qualifier, but instead reported the result at the original concentration. The other associated samples were nondetect and required no qualification.
  - In SDG ETFA4, toluene was detected below the RL in samples ETFA4, ETFB2, ETFB6, ETFB7, ETFC5, ETFC7, and ETFC9. These samples were qualified nondetect "U" and reported to the RL per NFG criteria. The other associated samples were nondetect for toluene and required no qualification.
  - In SDG ETFB5, acetone was detected below the RL in associated samples ETFE0, ETFE1, ETFE3, ETFB5, ETFD0, and ETFD8. These results were qualified nondetect "U" and reported to the RL per NFG criteria. Acetone was detected above the RL in ETFD1, but at a concentration less than 5 times the blank. Therefore, the result was qualified nondetect "U" and reported at the original concentration. The other associated samples in this SDG were nondetect for acetone and required no qualification
  - In SDG ETFB5, toluene was detected below the RL in samples ETFE0, ETFE1, ETFE3, ETFB5, ETFD0, ETFD1, and ETFD8. These results were qualified nondetect "U" and reported to the RL, per NFG criteria. The other associated samples in this SDG were nondetect for toluene and required no qualification.
- In FB ETFE1 (reported in SDG ETFB5), acetone, toluene, m,p-xylene, and o-xylene were detected below the RL, and 2-butanone was detected above the RL. This blank is associated with the samples collected September 17, 2019. Associated samples in SDG ETFA4 include ETFA9, ETFB0, ETFB1, ETFB2, ETFB3, ETFB4, ETFB6, ETFB7, ETFB8, ETFB9, ETFC5, ETFC6, ETFC7, ETFC8, and ETFC9. Associated samples in SDG ETFB5 include ETFE0, ETFE3, ETFB5, and ETFD0. TechLaw validators qualified acetone and toluene as nondetect "U" due to contamination in TB ETFE3. However, CH2M validators used the original laboratory results for these analytes to screen associated samples for potential field blank contamination.
  - In SDG ETFA4, acetone was detected above the RL in ETFB6 and ETFC7 at a concentration greater than 5 times the blank, and no qualification was required. In ETFC5, acetone was detected above the RL, but at a concentration less than 5 times the blank; therefore, the sample was qualified nondetect "U" and reported at the original concentration. The other associated samples were nondetect for acetone and no qualification was required.
  - In SDG ETFA4, 2-butanone was detected above the RL in ETFB6 at a concentration greater than 5 times the blank and no qualification was necessary. 2-Butanone was detected above the RL in ETFC7, but as the concentration did not exceed 5 times the blank, the sample was qualified nondetect "U" and reported at the original sample concentration. 2-Butanone was detected below the RL in samples ETFA9, ETFB1, and ETFC5 and was therefore qualified as nondetect "U" and

reported to the RL, per NFG criteria. The other associated samples in this SDG were nondetect and required no qualification.

  - In SDG ETFA4, toluene was detected below the RL in samples ETFB2, ETFB6, ETFB7, ETFC5, ETFC7, and ETFC9. Samples were qualified as nondetect "U" and reported to the RL per NFG criteria. The other associated samples in this SDG were nondetect for toluene and required no qualification.
  - In SDG ETFA4, m,p-xylene was detected below the RL in sample ETFB6. This sample was qualified nondetect "U" and reported to the RL per NFG criteria. The other samples in this SDG were nondetect for m,p-xylene and required no qualification.
  - In SDG ETFA4, the samples were nondetect for o-xylene and no qualification was required.
  - In SDG ETFB5, acetone was detected below the RL in samples ETFE0, ETFE3, ETFB5, ETFD0 and was therefore qualified nondetect "U" and reported to the RL per NFG criteria.
  - In SDG ETFB5, 2-butanone was detected above the RL in associated sample ETFE0, but at a concentration that did not exceed 5 times the blank. This sample was originally qualified nondetect "U" by TechLaw validators for TB contamination, and the sample was reported to 2 times the blank concentration. CH2M validators kept the "U" qualifier, but instead reported the result to the original concentration. The other associated samples in the SDG were nondetect for 2-butanone and required no qualification.
  - In SDG ETFB5, toluene was detected below the RL in samples ETFE0, ETFE3, ETEB5, and ETED0. Therefore, the associated samples were qualified nondetect "U" and reported to the RL per NFG criteria.
  - In SDG ETFB5, m,p-xylene was detected below the RL in ETFE0. The sample was qualified nondetect "U" and reported to the RL per NFG criteria. The remaining associated samples in this SDG were nondetect for m,p-xylene and required no qualification.
  - In SDG ETFB5, o-xylene was detected below the RL in ETFE0. The sample was qualified nondetect "U" and reported to the RL per NFG criteria. The remaining associated samples in this SDG were nondetect for o-xylene and required no qualification.

- In EB ETFE0 (reported in SDG ETFB5), acetone, toluene, m,p-xylene, and o-xylene were detected below the RL, and 2-butanone was detected above the RL. This blank is associated with the samples in the data set. In blank ETFE0, TechLaw validators qualified acetone and toluene as nondetect "U" due to contamination in TB ETFE3, and qualified 2-butanone, m,p-xylene, and o-xylene as nondetect "U" due to contamination in FB ETFE1. However, CH2M validators used the original laboratory results for these analytes to screen associated samples for potential equipment blank contamination.
  - In SDG ETFA4, acetone in samples ETFB6 and ETFC7 were detected above the RL at a concentration exceeding 5 times the blank and required no qualification. Acetone was detected above the RL in sample ETFC5, but at a concentration less than 5 times the blank. This sample was originally qualified "U" and reported to 2 times the RL by ESAT validators due to method blank contamination. Per professional judgement CH2M validators kept the "U" qualifier, but instead reported the result at the original concentration. The other associated samples were nondetect and required no qualification.
  - In SDG ETFA4, 2-butanone in sample ETFB6 was detected above the RL at a concentration exceeding 5 times the blank and required no qualification. 2-Butanone was detected above the RL in sample ETFC7, but at a concentration that did not exceed 5 times the blank; therefore, this sample was qualified nondetect "U" and reported at the original concentration. Associated samples ETFA4, ETFA9, ETFB1, and ETFC5 had detected concentrations of 2-butanone below the RL and were

therefore qualified nondetect "U" and reported at the RL, per NFG criteria. The other associated samples in this SDG were nondetect for 2-butanone and required no qualification.

- In SDG ETFA4, toluene was detected below the RL in samples ETFA4, ETFB2, ETFB6, ETFB7, ETFC5, ETFC7, and ETFC9. These samples were therefore qualified nondetect "U" and reported to the RL, per NFG criteria. The other associated samples in this SDG were nondetect for toluene and required no qualification.
- In SDG ETFA4, m,p-xylene was detected below the RL in sample ETFB6, and was therefore qualified nondetect "U" and reported to the RL per NFG criteria. The other samples in this SDG were nondetect for m,p-xylene and require no qualification.
- In SDG ETFA4, o-xylene was non detect in the associated samples and no qualification was required.
- In SDG ETFB5, acetone was detected above the RL at a concentration greater than 5 times the blank in sample ETFC0; no qualification was required. Acetone was detected above the RL in samples ETFD1 and ETFD3, but at a concentration that did not exceed the 5 times the blank. Therefore, these samples were qualified as nondetect "U" and reported at the original concentration. Acetone was detected below the RL in samples ETFE1, ETFE2, ETFA2, ETFB5, ETFC1, ETFC2, ETFD0, ETFD4, ETFD5, ETFD6, and ETFD8. These samples were qualified nondetect "U" and reported at the RL, per NFG criteria. The remaining associated samples in SDG ETFB5 were nondetect for acetone and required no qualification.
- In SDG ETFB5, 2-butanone was detected above the RL in sample ETFC0 at a concentration exceeding 5 times the blank; no qualification was required. 2-Butanone was detected above the RL, but at a concentration less than 5 times the blank in samples ETFE1, ETFA2, ETFD1, and ETFD3. These samples were originally qualified nondetect "U" by TechLaw validators for TB contamination, and the sample was reported to 2 times the blank concentration. CH2M validators kept the "U" qualifier, but instead reported the result to the original concentration. The other samples in this SDG were nondetect for 2-butanone and required no qualification.
- In SDG ETFB5, toluene was detected below the RL in samples ETFE1, ETFE3, ETFA2, ETFA3, ETFB5, ETFC0, ETFC2, ETFD0, ETFD1, ETFD3, ETFD4, ETFD5, and ETFD8. These samples were qualified as nondetect "U" and reported to the RL, per NFG criteria. The other associated samples in this SDG were nondetect for toluene and required no qualification.
- In SDG ETFB5, m,p-xylene was detected below the RL in ETFE1 and ETFC0. These samples were therefore qualified as nondetect "U" and reported to the RL, per NFG criteria. The other associated samples in this SDG were nondetect for m,p-xylene and required no qualification.
- In SDG ETFB5, o-xylene was detected below the RL in sample ETFE1. Therefore, this sample was qualified as nondetect "U" and reported to the RL, per NFG criteria. The other associated samples in this SDG were nondetect for o-xylene and required no qualification.
- In SDG ETFD7, acetone was nondetect in the associated samples and no qualification was required.
- In SDG ETFD7, 2-butanone was nondetect in the associated samples and no qualification was required.
- In SDG ETFD7, toluene was detected below the RL in sample ETFE2. This sample was qualified nondetect "U" and reported to the RL per NFG criteria. All other associated samples in this SDG were nondetect for toluene and no qualification was required.
- In SDG ETFD7, m,p-xylene was nondetect in the associated samples and no qualification was required.
- In SDG ETFD7, o-xylene was nondetect in the associated samples and no qualification was required.

Field Duplicate Samples

A total of 4 FD samples were collected for VOC analysis, meeting the minimum frequency of 1 per 10 field samples. FD samples were collected immediately following the parent sample and analyzed for the same parameters. The precision criteria, an RPD of less than 30 percent, was met for all analytes, with the following exceptions:

- Acetone was detected in FD pair ETFC1 (parent) and ETFC2 (duplicate), as well as FD pair ETFD4 (parent) and ETFD5 (duplicate) (both pairs reported in SDG ETFB5). The RPD in both cases was above criteria, but as sample concentrations were detected below the RL, no qualification was required.
- Trichloroethene was detected in both parent sample ETFD4 and FD ETFD5 (both reported in SDG ETFB5). The RPD was above criteria, but as sample concentrations in both samples were detected below the RL, no qualification was required.
- The RPD for chloroethane and toluene exceeded RPD criteria for FD pair ETFC1 (parent) and ETFC2 (duplicate) (reported in SDG ETFB5). These analytes were nondetects in ETFC1 but were detected below the RL in ETFC2. As sample concentrations were at or below the RL, no qualification was required.

Findings

The following subsections summarize the data validation findings and usability of the final reportable results. The sample numbers and locations do not include QA/QC samples.

Volatile Organic Compound Data

The VOC data set consists of the results for 51 analytes for each of the 38 monitoring well samples, excluding QA/QC samples, for a total of 1,938 results.

The data validation summary indicates the following:

- J and U qualifiers were applied to sample results that were potentially affected by QC deficiencies.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetect sample results were qualified U.
- None of the reported VOC data was rejected.

Though the evaluation of blanks and other QA/QC data indicates possible estimate values, the accuracy and precision are generally acceptable, and the data set completeness is deemed as 100 percent usable and may be used in the project decision-making process with qualification.

Chloride Data

The chloride data set consists of 1 result for each of the 38 monitoring well samples, excluding QA/QC samples. The validation summary of the chloride data indicates the following:

- J- qualifiers were applied to sample results that were potentially affected by QC deficiencies.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- None of the reported chloride data was rejected.

For chloride, 100 percent of the data, as qualified, can be used to make project decisions.

Total Organic Carbon Data

TOC data set consists of 1 TOC result for 38 monitoring well samples, excluding QA/QC samples.
The validation summary of the TOC data indicates the following:

- There was no indication of QA/QC deficiencies and no additional qualification was needed.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- None of the reported TOC results were rejected.

For TOC, 100 percent of the data, as qualified, can be used to make project decisions.

Overall Assessment

The final activity in the data quality evaluation is an assessment of whether the data meet the data quality objectives. The goal of the assessment was to demonstrate that a sufficient number of representative samples were collected, and the resulting analytical data can be used to support the decision-making process. The following summary highlights the data evaluation findings for the above-defined events:

- The precision and accuracy of the data, as measured by field and laboratory QC indicators, indicate that the data quality objectives were met.

  The completeness objective of 90 percent was met for all method/analyte combinations.

References

CH2M HILL (CH2M). 2013. *Quality Assurance Project Plan, Revision 2, OMC Plant 2 Site, Waukegan, Illinois*. *WA No. 105-RARA-0528, Contract No. EP-S5-06-01.* March.

CH2M HILL (CH2M). 2017. *Quality Assurance Project Plan Addendum II Letter, OMC Plant 2 Site, Waukegan, Illinois. WA No. 237-RARA-528, Contract No. EP-S5-06-01.* October.

CH2M Hill (CH2M). 2019. *Quality Assurance Project Plan Addendum III Letter, OMC Plant 2 Site, Waukegan, Illinois. WA No. 237-RARA-528, Contract No. EP-S5-06-01. February.*

U.S. Environmental Protection Agency (EPA). 2016. *National Functional Guidelines for Superfund Organic Methods Data Review*. EPA-540-R-2016-002. September.

Attachment 1
Qualification Summary

Attachment 1. Qualification Summary

Data Usability Evaluation - May 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Sample Name	Sample ID	SDG	CAS #	Analyte	Initial Result	Laboratory Qualification	Final Result	CH2M Validator Qualification	Unit	Reason Code
OMC-MW-600D	ETFA2	ETFB5	78-93-3	2-Butanone	22	U	11	U	ug/L	EB
OMC-MW-600D	ETFA2	ETFB5	67-64-1	Acetone	7	J	10	U	ug/L	EB
OMC-MW-600D	19CW03-01	SM9819	16887-00-6	Chloride	280		280	J-	mg/L	MS<LCL
OMC-MW-600D	ETFA2	ETFB5	108-88-3	Toluene	0.18	J	5	U	ug/L	TB, EB
OMC-MW-600S	ETFA3	ETFB5	108-88-3	Toluene	0.25	J	5	U	ug/L	TB, EB
OMC-MW-601D	ETFA4	ETFA4	78-93-3	2-Butanone	2.7	J	10	U	ug/L	EB
OMC-MW-601D	ETFA4	ETFA4	108-88-3	Toluene	0.17	J	5	U	ug/L	TB, EB
OMC-MW-603D	ETFA9	ETFA4	78-93-3	2-Butanone	32	J	50	U	ug/L	EB, FB
OMC-MW-604D	ETFB1	ETFA4	78-93-3	2-Butanone	110	J	250	U	ug/L	EB, FB
OMC-MW-604S	ETFB2	ETFA4	108-88-3	Toluene	0.23	J	5	U	ug/L	EB, FB, TB
OMC-MW-605S	ETFB5	ETFB5	67-64-1	Acetone	4.4	J	10	U	ug/L	EB, FB, TB
OMC-MW-605S	19CW03-14	SM9753	16887-00-6	Chloride	24		24	J-	mg/L	MS/MSD<LCL
OMC-MW-605S	ETFB5	ETFB5	108-88-3	Toluene	0.18	J	5	U	ug/L	EB, FB, TB
OMC-MW-606D	ETFB6	ETFA4	179601-23-1	m,p-Xylene	0.15	J	5	U	ug/L	EB, FB
OMC-MW-606D	ETFB6	ETFA4	108-88-3	Toluene	0.17	J	5	U	ug/L	EB, FB, TB
OMC-MW-606S	ETFB7	ETFA4	108-88-3	Toluene	0.15	J	5	U	ug/L	EB, FB, TB
OMC-MW-612D	ETFC0	ETFB5	179601-23-1	m,p-Xylene	0.3	J	5	U	ug/L	EB
OMC-MW-612D	ETFC0	ETFB5	108-88-3	Toluene	0.48	J	5	U	ug/L	EB, TB
OMC-MW-612S	ETFC1	ETFB5	67-64-1	Acetone	3.4	J	10	U	ug/L	EB
OMC-MW-612S-R	ETFC2	ETFB5	67-64-1	Acetone	6.1	J	10	U	ug/L	EB
OMC-MW-612S-R	ETFC2	ETFB5	108-88-3	Toluene	0.2	J	5	U	ug/L	EB, TB
OMC-MW-614D	ETFC5	ETFA4	78-93-3	2-Butanone	2.2	J	10	U	ug/L	EB, FB
OMC-MW-614D	ETFC5	ETFA4	67-64-1	Acetone	20	U	12	U	ug/L	EB, FB, TB
OMC-MW-614D	ETFC5	ETFA4	108-88-3	Toluene	0.57	J	5	U	ug/L	EB, FB, TB
OMC-MW-615D	ETFC7	ETFA4	78-93-3	2-Butanone	27		27	U	ug/L	EB, FB
OMC-MW-615D	ETFC7	ETFA4	108-88-3	Toluene	0.27	J	5	U	ug/L	EB, FB, TB
OMC-MW-619D	ETFC9	ETFA4	108-88-3	Toluene	0.29	J	5	U	ug/L	EB, FB, TB
OMC-MW-619S	ETFD0	ETFB5	67-64-1	Acetone	5	J	10	U	ug/L	EB, FB, TB
OMC-MW-619S	ETFD0	ETFB5	108-88-3	Toluene	0.27	J	5	U	ug/L	EB, FB, TB
OMC-MW-620D	ETFD1	ETFB5	78-93-3	2-Butanone	22	U	19	U	ug/L	EB
OMC-MW-620D	ETFD1	ETFB5	67-64-1	Acetone	17		17	U	ug/L	EB, TB
OMC-MW-620D	ETFD1	ETFB5	108-88-3	Toluene	0.23	J	5	U	ug/L	EB, TB
OMC-MW-621D	ETFD3	ETFB5	78-93-3	2-Butanone	22	U	14	U	ug/L	EB
OMC-MW-621D	ETFD3	ETFB5	67-64-1	Acetone	14		10	U	ug/L	EB
OMC-MW-621D	ETFD3	ETFB5	108-88-3	Toluene	0.24	J	5	U	ug/L	EB, TB
OMC-MW-621S	ETFD4	ETFB5	67-64-1	Acetone	9.1	J	10	U	ug/L	EB
OMC-MW-621S	ETFD4	ETFB5	108-88-3	Toluene	0.17	J	5	U	ug/L	EB, TB
OMC-MW-621S-R	ETFD5	ETFB5	67-64-1	Acetone	5.4	J	10	U	ug/L	EB
OMC-MW-621S-R	ETFD5	ETFB5	108-88-3	Toluene	0.17	J	5	U	ug/L	EB, TB
OMC-MW-625D	ETFD6	ETFB5	67-64-1	Acetone	8.2	J	20	U	ug/L	EB
OMC-MW-626D	ETFD8	ETFB5	67-64-1	Acetone	7.6	J	10	U	ug/L	EB, TB
OMC-MW-626D	ETFD8	ETFB5	108-88-3	Toluene	0.25	J	5	U	ug/L	EB, TB
OMC-TB-091719	ETFE3	ETFB5	67-64-1	Acetone	4	J	10	U	ug/L	EB, FB, TB
OMC-TB-091719	ETFE3	ETFB5	108-88-3	Toluene	0.25	J	5	U	ug/L	EB, FB, TB
OMC-TB-091819	ETFE2	ETFD7	108-88-3	Toluene	0.38	J	5	U	ug/L	EB
OMC-EB091719	ETFE0	ETFB5	78-93-3	2-Butanone	22	U	12	U	ug/L	FB
OMC-EB091719	ETFE0	ETFB5	67-64-1	Acetone	6.2	J	10	U	ug/L	FB, TB
OMC-EB091719	ETFE0	ETFB5	179601-23-1	m,p-Xylene	0.52	J	5	U	ug/L	FB
OMC-EB091719	ETFE0	ETFB5	95-47-6	o-Xylene	0.27	J	5	U	ug/L	FB
OMC-EB091719	ETFE0	ETFB5	108-88-3	Toluene	2.7	J	5	U	ug/L	FB, TB
OMC-FB091719	ETFE1	ETFB5	78-93-3	2-Butanone	11		11	U	ug/L	EB
OMC-FB091719	ETFE1	ETFB5	67-64-1	Acetone	7.4	J	10	U	ug/L	EB, TB
OMC-FB091719	ETFE1	ETFB5	179601-23-1	m,p-Xylene	0.52	J	5	U	ug/L	EB
OMC-FB091719	ETFE1	ETFB5	95-47-6	o-Xylene	0.28	J	5	U	ug/L	EB
OMC-FB091719	ETFE1	ETFB5	108-88-3	Toluene	2.6	J	5	U	ug/L	EB, TB

Definitions:

ug/L = *micrograms per liter;* ***mg/L =*** *milligrams per liter;* ***U*** *= nondetect;* ***J*** *= estimated;* ***J-*** *= estimated biased low*

Reason Code Definitions:

MS/MSD<LCL *= Matrix spike and/or Matrix spike duplicate recovery falls below LCL*

EB *= equipment blank contamination;* ***FB*** *= field blank contamination;* ***TB*** *= trip blank contamination*

Attachment 2
ESAT Validation Narratives

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: October 7, 2019

FROM: Timothy Prendiville, Supervisor (SR-6J)
Science and Quality Assurance Section

TO: Data User: Jacobs
Email address: kaitlin.ma@jacobs.com

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

Site Name: Outboard Marine Corp. (IL)

Case No: 48482 MA No: N/A SDG No: ETFA4

Number and Type of Samples: 20 waters (low/medium level volatiles)

Sample Numbers: ETFA4 – ETFA9, ETFB0 – ETFB4, ETFB6 – ETFB9, ETFC5 – ETFC9

Laboratory: ALS Laboratory Group Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 ESAT Contracting Officer's Representative
Mail Code: SA-5J

Case No: 48482 SDG No: ETFA4
Site Name: Outboard Marine Corp. (IL) Laboratory: ALS

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Twenty (20) preserved water samples labeled ETFA4 – ETFA9, ETFB0 – ETFB4, ETFB6 – ETFB9 and ETFC5 – ETFC9, were shipped to ALS Environmental located in Salt Lake City, UT. All samples were collected on September 16th and 17th, 2019. All samples were received intact and properly cooled on September 18th, 2019.

All samples were analyzed for the low/medium level volatile target analytes according to CLP SOW SOM02.4 (10/2016). The data package was reviewed according to the January 2017 NFG for SOM02.4 (EPA-540-R-2017-002) and the Region 5 ESAT Organic CLP Validation SOP.

Sample ETFB0 was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses.

No sample was identified as field blanks or trip blanks. Samples ETFA6/ETFA7 and ETFB3/ ETFB4 were identified as field duplicate pairs.

1. PRESERVATION AND HOLDING TIMES

No problems found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems found.

3. INITIAL CALIBRATION

No problems found.

4. INITIAL CALIBRATION VERIFICATION

No problems found.

5. CONTINUING CALIBRATION

No problems found.

6. BLANKS

The following samples were analyzed following a sample with analyte concentrations that exceed the instrument's calibration range with no interceding instrument blank. These results may be a product of or supplemented by cross contamination. The detects are qualified as estimated J. These results also exceeded the calibration range and were not reported in EXES because the final results in EXES are composites of the original analyses and their diluted analyses.

ETFA7, ETFB4
cis-1,2-Dichloroethene

ETFB1, ETFB3, ETFC5
Vinyl chloride, cis-1,2-Dichloroethene

The following samples have analyte results reported less than CRQLs. The associated method blanks results are less than CRQLs. Detects are qualified U. Sample results have been reported at the CRQLs.

ETFA4, ETFA5, ETFA7DL, ETFA8, ETFA9, ETFA9DL, ETFB0, ETFB0MS, ETFB0MSD, ETFB1, ETFB1DL, ETFB2, ETFB7, ETFB9, ETFC5DL, ETFC6, ETFC8, ETFC9, VHBLKW1
Acetone

ETFA7DL
1,4-Dichlorobenzene

The following sample has analyte results reported greater than CRQL but less than 2x CRQL. The associated method blank result is less than CRQL. Detect is qualified U. Sample result has been reported at 2x the CRQL.

ETFC5
Acetone

7. DEUTERATED MONITORING COMPOUNDS / SURROGATES

No problems found.

8. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample ETFB0 was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses.

No problems found.

9. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not required for this analysis.

10. CLEANUP PROCEDURES

Not required for this analysis.

11. LABORATORY CONTROL SAMPLE

Not required for this analysis.

12. INTERNAL STANDARD

No problems found.

13. TARGET ANALYTE IDENTIFICATION

The following samples have analyte results greater than the upper limit of calibration range. These samples were re-analyzed at dilution to bring the detections within the calibration ranges.

ETFA6, ETFA7, ETFB8
cis-1,2-Dichloroethene

ETFA9, ETFB1, ETFB3, ETFB4, ETFC5
Vinyl chloride, cis-1,2-Dichloroethene

14. REPORTED CONTRACT QUANTITATION LIMIT

The following samples have analyte results greater than or equal to method detection limits (MDLs) and below contract required quantitation limits (CRQLs). Detects are qualified as estimated J. Only the results for the analytes that exceeded the calibration ranges are reported from the diluted analyses in the EXES Sample Summary Report.

ETFA4
Vinyl chloride, Methyl acetate, 1,1-Dichloroethane, cis-1,2-Dichloroethene, 2-Butanone, Toluene

ETFA5, ETFA8
Vinyl chloride, 1,1-Dichloroethane, cis-1,2-Dichloroethene

ETFA6, ETFA7, ETFB8
1,1-Dichloroethene, trans-1,2-Dichloroethene

ETFA6DL, ETFA7DL, ETFB3, ETFB4, ETFB4DL
trans-1,2-Dichloroethene

ETFA9, ETFB1
1,1-Dichloroethene, trans-1,2-Dichloroethene, 2-Butanone

ETFB0, ETFB0MSD
Vinyl chloride, Chloroethane, 1,1-Dichloroethane, cis-1,2-Dichloroethene

ETFB0MS
Vinyl chloride, 1,1-Dichloroethane, cis-1,2-Dichloroethene

ETFB1DL
Trichloroethene

ETFB2, ETFB7
Chloroethane, trans-1,2-Dichloroethene, 1,1-Dichloroethane, Toluene

ETFB6
Chloroethane, Carbon disulfide, Methyl acetate, Methylene chloride, trans-1,2-Dichloroethene, 1,1-Dichloroethane, 4-Methyl-2-pentanone, Toluene, 2-Hexanone, m,p-Xylene

ETFB8DL
Vinyl chloride, trans-1,2-Dichloroethene

ETFB9
cis-1,2-Dichloroethene

ETFC5
trans-1,2-Dichloroethene, 2-Butanone, Toluene

ETFC5DL
1,1-Dichloroethene, trans-1,2-Dichloroethene, Trichloroethene

ETFC6
Vinyl chloride

ETFC7
Chloroethane, 1,1-Dichloroethene, Carbon disulfide, 4-Methyl-2-pentanone, Toluene

ETFC8
Vinyl chloride, trans-1,2-Dichloroethene, 1,1-Dichloroethane, cis-1,2-Dichloroethene, Trichloroethene

ETFC9
Chloroethane, cis-1,2-Dichloroethene, Toluene

VBLKW1
Acetone, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

VBLKW2
Acetone, Chlorobenzene, Ethylbenzene, m,p-Xylene, Styrene, Isopropylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

VHBLKW1
Chloroform

15. TENTATIVELY IDENTIFIED COMPOUNDS

Sample results are identified in the separate Data Validation Report titled ‘Tentatively Identified Compounds’. The manually reviewed report is titled ‘48482 sdg ETFA4 TICs’.

16. SYSTEM PERFORMANCE

No problems found.

17. FIELD QC SAMPLES

No sample was identified as field blanks or trip blanks. Samples ETFA6/ETFA7 and ETFB3/ ETFB4 were identified as field duplicate pairs. The results and RPDs for the field duplicate samples are summarized in the following tables:

CLP Sample No.	**ETFA6**	**ETFA7**	
Sample Identifier:	OMC-MW-602D	OMC-MW-602D-R	
Location:	MW-602D	MW-602D-R	
Collection Date/Time:	09/16/19 15:40	09/16/19 15:45	RPD
Units:	µg/L	µg/L	%
Dilution factor:	25	25	
Vinyl chloride	4300	4300	0
1,1-Dichloroethene	33 J	33 J	0
trans-1,2-Dichloroethene	53 J	50 J	5.8
cis-1,2-Dichloroethene	13000 E	13000 E	0
	ETFA6DL	**ETFA7DL**	
Dilution factor:	100	100	
Vinyl chloride	4200	4800	13
trans-1,2-Dichloroethene	48 J	57 J	17
cis-1,2-Dichloroethene	12000	13000	8.0

CLP Sample No.	**ETFB3**	**ETFB4**	
Sample Identifier:	OMC-MW-605D	OMC-MW-605D-R	
Location:	MW-605D	MW-605D-R	
Collection Date/Time:	09/17/19 15:30	09/17/19 15:35	RPD
Units:	µg/L	µg/L	%
Dilution factor:	25	25	
Vinyl chloride	6400 E	6400 E	0
trans-1,2-Dichloroethene	15 J	14 J	6.9
cis-1,2-Dichloroethene	14000 E	13000 E	7.4
	ETFB3DL	**ETFB4DL**	
Dilution factor:	100	100	
Vinyl chloride	6600	6100	7.9
trans-1,2-Dichloroethene	ND	15 J	200
cis-1,2-Dichloroethene	14000	13000	7.4

18. OVERALL ASSESSMENT

Manual integrations were performed for some samples. These manual integrations were reviewed by the reviewer and appear to be acceptable without additional qualifications.

Sample ETFB8DL (Not Reported) and QC sample VHBLKW1 reported an alkane as an individual TIC. The TIC was removed by the Reviewer.

Case No: 48482 SDG No: ETFA4
Site Name: Outboard Marine Corp. (IL) Laboratory: ALS

Validation Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

=UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: October15, 2019

FROM: Timothy Prendiville, Supervisor (SR-6J)
Science and Quality Assurance Section

TO: Data User: Jacobs
Email address: kaitlin.ma@jacobs.com

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

Site Name: Outboard Marine Corp. (IL)

Case No: 48482 MA No: N/A SDG No: ETFB5

Number and Type of Samples: 20 waters (low/medium level volatiles)

Sample Numbers: ETFA2, ETFA3, ETFB5, ETFC0 – ETFC4, ETFD0 – ETFD6, ETFD8, ETFD9, ETFE0, ETFE1, ETFE3

Laboratory: ALS Laboratory Group Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 ESAT Contracting Officer's Representative
Mail Code: SA-5J

Case No: 48482 SDG No: ETFB5
Site Name: Outboard Marine Corp. (IL) Laboratory: ALS

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Twenty (20) preserved water samples labeled; ETFA2, ETFA3, ETFB5, ETFC0 – ETFC4, ETFD0 – ETFD6, ETFD8, ETFD9, ETFE0, ETFE1 and ETFE3, were shipped to ALS Environmental located in Salt Lake City, UT. All samples were collected from September 16th - 18th, 2019. All samples were received intact and properly cooled on September 18th and 19th, 2019.

All samples were analyzed for the low/medium level volatile target analytes according to CLP SOW SOM02.4 (10/2016). The data package was reviewed according to the January 2017 NFG for SOM02.4 (EPA-540-R-2017-002) and the Region 5 ESAT Organic CLP Validation SOP.

Sample ETFB5 was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses.

Sample ETFE0 was identified as equipment blank, Sample ETFE1 was identified as field blank. Sample ETFE3 was identified as trip blank. Samples ETFC1/ETFC2 and ETFD4/ ETFD5 were identified as field duplicate pairs.

1. PRESERVATION AND HOLDING TIMES

No problems found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems found.

3. INITIAL CALIBRATION

No problems found.

4. INITIAL CALIBRATION VERIFICATION

No problems found.

5. CONTINUING CALIBRATION

No problems found.

6. BLANKS

The following samples were analyzed following a sample with analyte concentrations that exceed the instrument's calibration range with no interceding instrument blank. These results may be a product of or supplemented by cross contamination. The detects are qualified as estimated J.

ETFB5MS, ETFB5MSD
cis-1,2-Dichloroethene

The following samples have analyte results reported less than CRQLs. The associated storage blanks results are less than CRQLs. Detects are qualified U. Sample results have been reported at the CRQLs.

ETFB5MS, ETFC0, ETFD6
Methylene chloride

The following samples have analyte results reported less than CRQLs. The associated trip blanks results are less than CRQLs. Detects are qualified U. Sample results have been reported at the CRQLs.

ETFE0, ETFE1
Acetone, Toluene

The following samples have analyte results reported less than CRQLs. The associated field blanks results are less than CRQLs. Detects are qualified U. Sample results have been reported at the CRQLs.

ETFE0
o-Xylene, m,p-Xylene

The following samples have analyte results reported greater than CRQL but less than 2X the field blank result. The associated field blank result is greater than CRQL. Detects are qualified U. Sample results have been reported at 2X the blank results.

ETFA2, ETFD1, ETFD3, ETFE0
2-Butanone

7. DEUTERATED MONITORING COMPOUNDS / SURROGATES

No problems found.

8. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample ETFB5 was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses.

No problems found.

9. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not required for this analysis.

10. CLEANUP PROCEDURES

Not required for this analysis.

11. LABORATORY CONTROL SAMPLE

Not required for this analysis.

12. INTERNAL STANDARD

No problems found.

13. TARGET ANALYTE IDENTIFICATION

The following samples have analyte results greater than the upper limit of calibration range. These samples were re-analyzed at dilution to bring the detections within the calibration ranges.

ETFB5
cis-1,2-Dichloroethene

ETFC3, ETFD9
cis-1,2-Dichloroethene, Trichloroethene

ETFD6
Vinyl chloride

The following samples have analyte results greater than the upper limit of calibration range. No further dilutions were performed because these samples were used for QC purpose only. The results are qualified as estimated J.

ETFB5MS, ETFB5MSD
cis-1,2-Dichloroethene

14. REPORTED CONTRACT QUANTITATION LIMIT

The following samples have analyte results greater than or equal to method detection limits (MDLs) and below contract required quantitation limits (CRQLs). Detects are qualified as estimated J. Only the results for the analytes that exceeded the calibration ranges are reported from the diluted analyses in the EXES Sample Summary Report.

ETFA2
Acetone, Methyl acetate, cis-1,2-Dichloroethene, Toluene

ETFA3
Vinyl chloride, cis-1,2-Dichloroethene, Toluene

ETFB5
Chloroethane, 1,1-Dichloroethene, Acetone, trans-1,2-Dichloroethene, 1,1-Dichloroethane, 1,2-Dichloroethane, Toluene

ETFB5DL
Chloroethane, 1,1-Dichloroethene, Acetone, trans-1,2-Dichloroethene, 1,1-Dichloroethane, 1,2-Dichloroethane

ETFB5MS
Acetone, trans-1,2-Dichloroethene, 1,1-Dichloroethane, 1,2-Dichloroethane

ETFB5MSD
Chloroethane, Acetone, trans-1,2-Dichloroethene, 1,1-Dichloroethane, 1,2-Dichloroethane

ETFC0
1,1-Dichloroethene, trans-1,2-Dichloroethene, Trichloroethene, 4-Methyl-2-Pentanone, Toluene, m,p-Xylene

ETFC1
Acetone, 1,1-Dichloroethane, cis-1,2-Dichloroethene, Chlorobenzene

ETFC2
Chloroethane, Acetone, 1,1-Dichloroethane, cis-1,2-Dichloroethene, Toluene, Chlorobenzene

ETFC3
trans-1,2-Dichloroethene

ETFC4
cis-1,2-Dichloroethene, Trichloroethene

ETFD0
Acetone, cis-1,2-Dichloroethene, Trichloroethene, Toluene

ETFD1
Vinyl chloride, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Toluene

ETFD2
Chloroethane, trans-1,2-Dichloroethene, 1,1-Dichloroethane, Trichloroethene

ETFD3
trans-1,2-Dichloroethene, 1,1-Dichloroethane, Trichloroethene, Toluene

ETFD4, ETFD5
Acetone, cis-1,2-Dichloroethene, Trichloroethene, Toluene

ETFD6
Acetone, cis-1,2-Dichloroethene

ETFD8
Vinyl chloride, Acetone, cis-1,2-Dichloroethene, Toluene

ETFD9
trans-1,2-Dichloroethene, 1,1-Dichloroethane

ETFD9DL
1,1-Dichloroethene, trans-1,2-Dichloroethene

ETFE1
o-Xylene, m,p-Xylene

ETFE3
Acetone, Toluene

VBLKW1
Chlorobenzene, Styrene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

VBLKW2
1,4-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

VHBLKW1
Methylene chloride

15. TENTATIVELY IDENTIFIED COMPOUNDS

Sample results are identified in the separate Data Validation Report titled 'Tentatively Identified Compounds'. The manually reviewed report is titled '48482 sdg ETFB5 TICs'.

16. SYSTEM PERFORMANCE

No problems found.

17. FIELD QC SAMPLES

Sample ETFE0 was identified as equipment blank, Sample ETFE1 was identified as field blank. Sample ETFE3 was identified as trip blank. The results for the QC blanks and their associated samples are summarized in the following table:

Analytes	QC ID	Trip blank	Field blank	Equipment blank
	CLP Sample ID	**ETFE3**	**ETFE1**	**ETFE0**
	Sample Identifier	OMC-TB091719	OMC-FB091719	OMC-EB091719
	Location	TB	FB	EB
	Collection Date	09/17/19 8:00	09/17/19 15:10	09/17/19 15:00
	Received Date	09/18/19 10:00	09/18/19 10:00	09/18/19 10:00
	DF, units	1.0, µg/L	1.0, µg/L	1.0, µg/L
Acetone		4.0 J	ND	ND
2-Butanone		ND	11	ND
Toluene		0.25 J	ND	ND

Analytes	QC ID	Trip blank	Field blank	Equipment blank
	CLP Sample ID	**ETFE3**	**ETFE1**	**ETFE0**
	Sample Identifier	OMC-TB091719	OMC-FB091719	OMC-EB091719
	Location	TB	FB	EB
	Collection Date	09/17/19 8:00	09/17/19 15:10	09/17/19 15:00
	Received Date	09/18/19 10:00	09/18/19 10:00	09/18/19 10:00
	DF, units	1.0, µg/L	1.0, µg/L	1.0, µg/L
o-Xylene		ND	0.28 J	ND
m,p-Xylene		ND	0.52 J	ND
Associated samples:		ETFB5, ETFD0 - ETFD2, ETFD8, ETFD9, ETFE0, ETFE1	ETFA2, ETFA3, ETFB5, ETFC0 – ETFC4, ETFD0 – ETFD6, ETFD8, ETFD9, ETFE0	ETFA2, ETFA3, ETFB5, ETFC0 - ETFC4, ETFD3 - ETFD6

Samples ETFC1/ETFC2 and ETFD4/ ETFD5 were identified as field duplicate pairs. The results and RPDs for the field duplicate samples are summarized in the following tables:

CLP Sample No.	**ETFC1**	**ETFC2**	
Sample Identifier:	OMC-MW-612S	OMC-MW-612S-R	
Location:	MW-612S	MW-612S-R	
Collection Date/Time:	09/18/19 11:05	09/18/19 11:10	RPD
Units:	µg/L	µg/L	%
Dilution factor:	1	1	
Chloroethane	ND	0.43 J	200
Acetone	3.4 J	6.1 J	57
1,1-Dichloroethane	0.36 J	0.32 J	12
cis-1,2-Dichloroethene	0.35 J	0.33 J	5.9
Toluene	ND	0.20 J	200
Chlorobenzene	0.19 J	0.20 J	5.1

CLP Sample No.	**ETFD4**	**ETFD5**	
Sample Identifier:	OMC-MW-621S	OMC-MW-621S-R	
Location:	MW-621S	MW-621S-R	
Collection Date/Time:	09/18/19 12:20	09/18/19 12:25	RPD
Units:	µg/L	µg/L	%
Dilution factor:	1	1	
Acetone	9.1 J	5.4 J	23
cis-1,2-Dichloroethene	0.29 J	0.29 J	0
Trichloroethene	0.45 J	0.32 J	34
Toluene	0.17 J	0.17 J	0

18. OVERALL ASSESSMENT

No manual integrations were performed for this SDG.

Validation Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: October 7, 2019

FROM: Timothy Prendiville, Supervisor (SR-6J)
Science and Quality Assurance Section

TO: Data User: Jacobs
Email Address: Kaitlin.Ma@jacobs.com

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

SITE Name: Outboard Marine Corporation (IL)

Case No: 48482 MA No: _____ SDG No: ETFD7

Number and Type of Samples: 2 waters (Low/Medium Volatiles)

Sample Numbers: ETFD7, ETFE2

Laboratory: ALS Environmental (SLC) Hrs. for Review:

Following are our findings:

CC: Howard Pham
Region 5 ESAT Contracting Officer's Representative
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Two (2) preserved water samples; ETFD7 and ETFE2, were shipped to ALS Laboratory Group (SLC) located in Salt Lake City, UT. The samples were collected on September 18, 2019 and received intact and properly cooled on September 19, 2019.

All samples were analyzed according to CLP SOW SOM02.4 (10/2016) for the low/medium level volatile target analytes. The data package was reviewed according to the January 2017 NFG for SOM02.4 (EPA-540-R-2017-002) and the Region 5 ESAT Organic CLP Validation SOP.

Sample ETFD7 was utilized for laboratory QC, i.e. MS/MSD analyses.

Sample ETFE2 was identified as a trip blank.

1. PRESERVATION AND HOLDING TIMES

No problems found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems found.

3. INITIAL CALIBRATION

No problems found.

4. INITIAL CALIBRATION VERIFICATION

No problems found.

5. CONTINUING CALIBRATION

No problems found.

6. BLANKS

No problems found.

7. DEUTERATED MONITORING COMPOUNDS / SURROGATES

No problems found.

8. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample ETFD7 was utilized for laboratory QC, i.e. MS/MSD analyses.

No problems found.

9. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not required for this analysis.

10. CLEANUP PROCEDURES

Not required for this analysis.

11. LABORATORY CONTROL SAMPLE

Not required for this analysis.

12. INTERNAL STANDARD

No problems found.

13. TARGET ANALYTE IDENTIFICATION

No problems found.

14. REPORTED CONTRACT QUANTITATION LIMIT

The following volatile samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ETFD7
1,1-Dichloroethane, cis-1,2-Dichloroethene, Trichloroethene

ETFD7MS, ETFD7MSD
1,1-Dichloroethane, cis-1,2-Dichloroethene

ETFE2
Toluene

VBLKW2
1,4-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

15. TENTATIVELY IDENTIFIED COMPOUNDS

No TICs reported for this SDG.

16. SYSTEM PERFORMANCE

No problems found.

17. FIELD QC SAMPLES

Sample ETFE2 was identified as a trip blank. Sample ETFE2 reported Toluene with a concentration of 0.38 µg/L.

18. OVERALL ASSESSMENT

No manual integrations were performed for this SDG.

Case No: 48482 SDG No: ETFD7
Site Name: Outboard Marine Corporation (IL) Laboratory: ALS

Validation Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.